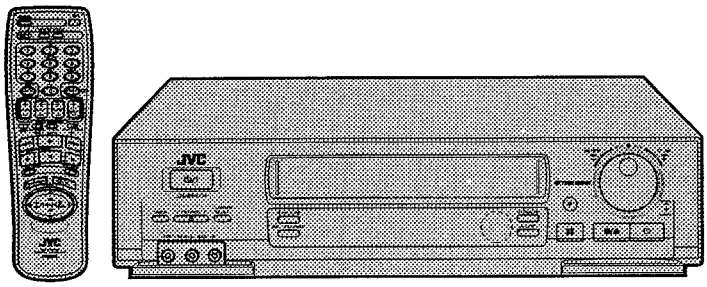
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-DD845EK



TIME SCAN

VIDEO Plus+ Hi-Fi VHS PAL

SPECIFICATIONS

GENERAL

Power requirement	: AC 220 – 240 V~, 50/60 Hz
Power consumption	: 24 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 x 94 x 340 mm
Weight	: 4.3 kg
Format	: VHS PAL standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP)	: 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: DA4 (Double Azimuth) helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output	: 21-pin scart connector x 2 (IN/OUT x 1, IN x 1) RCA connector x 1 (IN x 1, OUT x 1)

TUNER/TIMER

TV channel storage capacity	: 99 positions (+AUX position "AU")
Tuning system	: Frequency synthesized tuner
Channel coverage	: UHF channels 21 – 69 (470 – 862 MHz)
Aerial output	: UHF channels 22 – 69 (Adjustable)
Memory backup time	: Approx. 3 min.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "AA" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.& O.E Design and specifications subject to change without notice.

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Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorised in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits.
2. Any unauthorised design alterations or additions will void the manufacturer's guarantee ; furthermore the manufacturer cannot accept responsibility for personal injury or property damage resulting therefrom.
3. Essential safety critical components are identified by (⚠) on the Parts List and by shading on the schematics ,and must never be replaced by parts other than those listed in the manual. Please note however that many electrical and mechanical parts in the product have special safety related characteristics . These characteristics are often not evident from visual inspection . Parts other than specified by the manufacturer may not have the same safety characteristics as the recommended replacement parts shown in the Parts List of the service manual and may create shock , fire , or other hazards .
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

Warning

1. Service should be performed by qualified personnel only.
2. This equipment has been designed and manufactured to meet international safety standards.
3. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
4. Repairs must be made in accordance with the relevant safety standards.
5. It is essential that safety critical components are replaced by approved parts.
6. If mains voltage selector is provided, check setting for local voltage .

Safety Precautions

The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT

Connection to the mains supply in the United Kingdom. DO NOT cut off the mains plug from this equipment. If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain a proper safety approved extension lead/adapter or consult your dealer.
BE SURE to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover.
If nonetheless the mains plug is cut off remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.
If this product is not supplied fitted with a mains plug then follow the instructions given below:
DO NOT make any connection to the Larger Terminal coded E or Green.
The wires in the mains lead are coloured in accordance with the following code:

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the mains outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the mains outlet prior to connecting or disconnecting any signal lead or aerial.

VHS PAL HQ VIDEO Plus+

- Only cassettes marked "VHS" can be used with this videorecorder.
- HQ VHS is compatible with existing VHS equipment.
- Video Plus+ and PlusCode are trademarks of Gemstar Development Corporation. The Video Plus+ system is manufactured under license from Gemstar Development Corporation.
- Certain audio features of this product manufactured under a license from Desper Products, Inc. Spatializer® is a trademark owned by Desper Products, Inc.

IMPORTANT

- Please read the various precautions on p. 2 – 3 of this instruction manual before installing or operating the recorder.
- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

The STANDBY/ON ⏻/I button does not completely shut off mains power from the unit, but switches operating current on and off. " ⏻ " shows electrical power standby and " I " shows ON.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.

Failure to heed the following precautions may result in damage to the recorder, remote control or video cassette.

1. **DO NOT place the recorder . . .**
   ... in an environment prone to extreme temperatures or humidity.
   ... in direct sunlight.
   ... in a dusty environment.
   ... in an environment where strong magnetic fields are generated.
   ... on a surface that is unstable or subject to vibration.
2. **DO NOT block the recorder's ventilation openings.**
3. **DO NOT place heavy objects on the recorder or remote control.**
4. **DO NOT place anything which might spill on top of the recorder or remote control.**
5. **AVOID violent shocks to the recorder during transport.**

MOISTURE CONDENSATION

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form in the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder turned on for a few hours to let the moisture dry.

ABOUT HEAD CLEANING

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Be sure to contact your nearest JVC dealer if such troubles occur.

Some Do's And Don'ts On The Safe Use Of Equipment

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured.

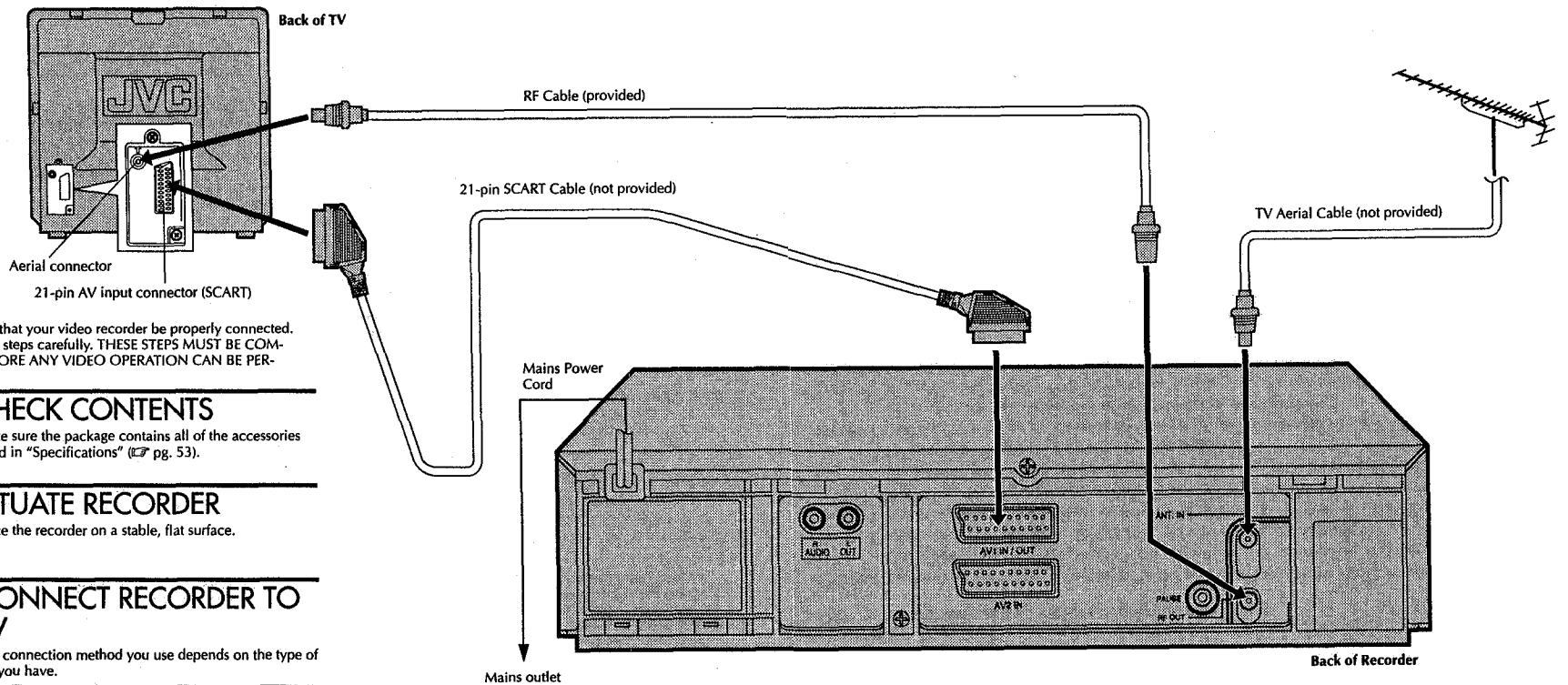
DO read the operating instructions before you attempt to use the equipment.
DO ensure that all electrical connections (including the mains plug, extension leads and interconnections between pieces of equipment) are properly made and in accordance with the manufacturer's instructions. Switch off and withdraw the mains plug when making or changing connections.
DO consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.
DO be careful with glass panels or doors on equipment.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or if it is damanged in any way — switch off, withdraw the mains plug and consult your dealer.
DON'T remove any fixed cover as this may expose dangerous voltages.
DON'T leave equipment switched on when it is unattended unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch off using the switch on the equipment and make sure that your family knows how to do this. Special arrangements may need to be made for infirm or handicapped people.
DON'T use equipment such as personal stereos or radios so that you are distracted from the requirements of road safety. It is illegal to watch television whilst driving.
DON'T listen to headphones at high volume, as such use can permanently damage your hearing.
DON'T obstruct the ventilation of the equipment, for example with curtains or soft furnishings. Overheating will cause damage and shorten the life of the equipment.
DON'T use makeshift stands and NEVER fix legs with wood screws — to ensure complete safety always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.
DON'T allow electrical equipment to be exposed to rain or moisture.

ABOVE ALL...

— **NEVER** let anyone especially children push anything into holes, slots or any other opening in the case — this could result in a fatal electrical shock;
— **NEVER** guess or take chances with electrical equipment of any kind — it is better to be safe than sorry!

Basic Connections



It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

1 CHECK CONTENTS

Make sure the package contains all of the accessories listed in "Specifications" (☞ pg. 53).

2 SITUATE RECORDER

Place the recorder on a stable, flat surface.

3 CONNECT RECORDER TO TV

The connection method you use depends on the type of TV you have.

RF CONNECTION

- *To Connect To A TV With NO 21-pin AV input connector (SCART) . . .*

a– Disconnect the TV aerial cable from the TV.
b– Connect the TV aerial cable to the ANT. IN jack on the rear panel of the recorder.
c– Connect the provided RF cable between the RF OUT jack on the rear panel of the recorder and the TV's aerial connector.

Before operating the recorder, make sure the TV's channel is set to the VIDEO channel (☞ pg. 6).

AV CONNECTION

- *To Connect To A TV with 21-pin AV input connector (SCART) . . .*

a– Connect the aerial, recorder and TV as per "RF CONNECTION".
b– Connect an optional SCART cable between the AV1 IN/OUT socket on the rear panel of the recorder and the TV's 21-pin AV input connector (SCART).

Before operating the recorder, make sure the TV is set to the VIDEO (or AV) mode.

4 CONNECT RECORDER TO MAINS

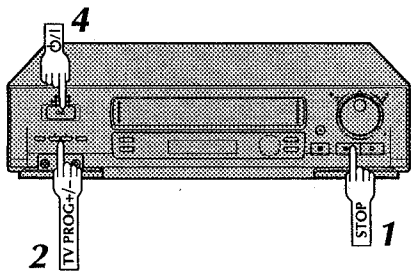
Plug the end of the mains power cord into a mains outlet.

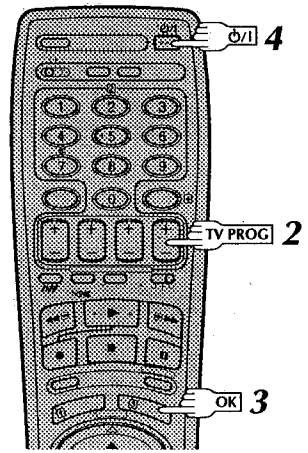
ATTENTION

If you have finished all the necessary connections, go to "Video Channel Set" on page 6, then perform Auto Set Up on page 8; do NOT press the ⏻/I button on the recorder/remote control to turn on the recorder's power before you start Auto Set Up.

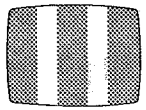
Video Channel Set

Video Channel (RF Output Channel) is the channel on which your TV receives picture and sound signals from the video recorder through the RF cable.





TEST SIGNAL



The channel on which the screen to the left appear clearly in step 2 is your Video Channel.

To view picture signals from the video recorder, set your TV to the Video Channel.

If you have connected the video recorder to your TV via the provided RF cable only (RF connection) – Go to "With RF Connection" below.

If you have connected the video recorder to your TV via both the provided RF cable and a 21-pin SCART cable (AV connection) – Go to "With AV Connection" on next page.

IMPORTANT:
Before performing the following steps, make sure the recorder's power is off and there is no cassette inserted in the recorder.

With RF Connection

1 ACCESS VIDEO CHANNEL SET MODE

Press and hold down **STOP** on the recorder until the display panel shows the following.

2 SET VIDEO CHANNEL

Set your TV to UHF channel 52. (Refer to the instructions supplied with your TV set for how to do this.)

- If the two vertical white bars appear clearly on the screen as shown in the illustration at bottom left, go to step 3.
- If the two vertical white bars do not appear clearly, press **TV PROG+** or **–** to set the video recorder to a vacant channel between 22 and 69 which is not occupied by any local station in your area. Refer to list on page 47 for details of broadcast stations in your area.

(Ex.) If channel 36 is available in your area

Then set your TV to UHF channel 36 and check if the two vertical white bars appear clearly on the screen; if so, go to step 3. If not, re-set the video recorder to another vacant channel and try again.

NOTES:

- *If you set the video recorder to a channel which is occupied by a local station or has neighbouring channels that are occupied by local stations, the picture reception quality will be affected and some interference noise will appear on the TV screen. Be sure to select a vacant channel which has no broadcast on neighbouring channels.*
- *If you cannot obtain the two vertical white bars clearly with any channel between 22 and 69, consult your JVC dealer.*

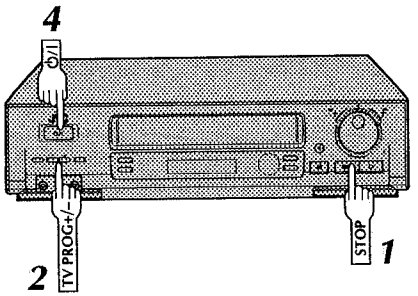
3 EXIT VIDEO CHANNEL SET MODE

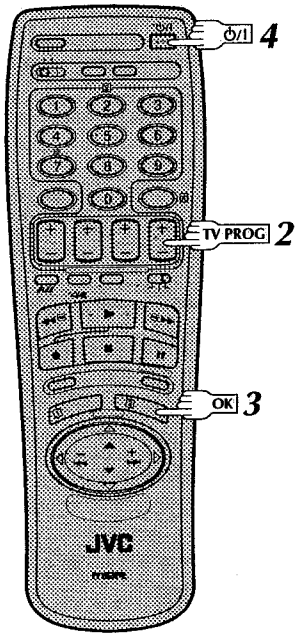
Press **OK**.

4 TURN OFF THE RECORDER

Press ⏻/I.

After you finish this step, go to "Auto Set Up" on page 8.





IMPORTANT:
Before performing the following steps, make sure the recorder's power is off and there is no cassette inserted in the recorder.

With AV Connection

1 ACCESS VIDEO CHANNEL SET MODE

Press and hold down **STOP** on the recorder until the display panel shows the following.

2 SET VIDEO CHANNEL

Press **TV PROG** – until the display panel shows "–OUT– –".

- Now the video channel is set to off.

3 EXIT VIDEO CHANNEL SET MODE

Press **OK**.

4 TURN OFF THE RECORDER

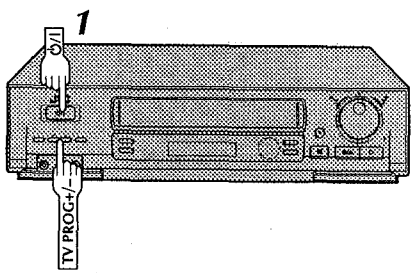
Press ⏻/I.

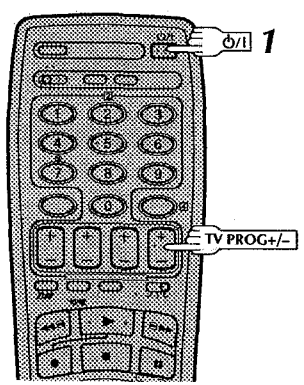
To view picture signals from the video recorder, set your TV to its AV mode.

After you finish this step, go to "Auto Set Up" on page 8.

Auto Set Up

Auto Channel Set/Auto Clock Set/Auto Guide Program Number Set





The Auto Set Up function sets the tuner channels, clock and Video Plus+ assigned Guide Program numbers automatically when the ⏻/I button on the recorder/remote is first pressed to power on the recorder after you plug the mains power cord into a mains outlet.

Before starting the following procedure, make sure that the TV aerial cable is connected to the recorder and that the recorder's mains power cord is connected to a mains outlet (☞ pg.4).

1 PERFORM AUTO SET UP

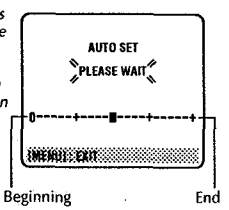
Press ⏻/I on the recorder or remote control.

"Auto" appears on the display panel and blinks; do NOT press any button on the recorder or remote control until the display panel shows the current time or "CH1" or "--:--". (Refer to box on page 9.) Auto Set Up usually takes about 4 – 12 minutes; the duration differs by the area.

- Auto channel set function takes place first; it assigns automatically all receivable stations in your area.
- Auto clock set function sets the clock automatically.
- During auto channel set, the recorder recognizes each station name of the detected stations and stores them in the recorder's memory, then automatically sets Video Plus+ assigned Guide Program number for those stations according to the broadcast area.

NOTES:

- *If the TV power is on and its VIDEO channel or AV mode is selected during Auto Set Up, the AUTO SET screen will appear. As Auto Set Up progresses, the "■" mark on the screen moves from left to right.*
- *If there is a power cut, or if you press ⏻/I or MENU while Auto Set Up is in progress, Auto Set Up will be interrupted; be sure to turn off the recorder power once and press ⏻/I to turn the power back on to re-start Auto Set Up.*



ATTENTION

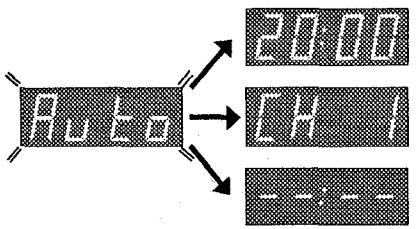
Once you have performed Auto Set Up, even if the recorder's memory backup has expired, all the stored stations and their Guide Program numbers remain in the recorder's memory and the recorder will not perform Auto Set Up again. You only need to set the clock. (☞ pg. 48)

If you have moved to a different area, perform each setting as required.

- Tuner setting ☞ pg. 40
- Clock setting ☞ pg. 48
- Video Plus+ Guide Program number setting ☞ pg. 10

If a new station starts broadcasting in your area, perform both tuner setting (☞ pg. 40) and Video Plus+ Guide Program number setting (☞ pg. 10).

Auto Set Up results appear on the display panel



- When both auto channel set and auto clock set have been completed successfully the correct current time will be displayed.
- When auto channel set has been completed successfully but auto clock set has not, "CH" will be displayed.
- When neither auto channel set nor auto clock set has been completed successfully, "--:--" will be displayed.

* See "Video Plus+ Setup" on page 10 to check if the Guide Program numbers have been set correctly.

If both auto channel set and auto clock set have been performed successfully:

1 Turn on the TV and select its VIDEO channel or AV mode, then make sure that all necessary stations have been stored in the recorder's memory by using the **TV PROG** button(s).
- If station names (ID — ☞ pg. 46) have also been stored in the recorder's memory, the station name will be displayed at the top left corner of the screen for about 5 seconds when the recorder is tuned to a different station.
- If you want to set the tuner manually such as to add or skip channels, to change preset positions, or to set or change station names, see pages 42 – 45.

2 Perform "Video Plus+ Setup" on page 10 to check if the Guide Program numbers have been set correctly.

If auto channel set has succeeded but auto clock set has not:

1 Turn on the TV and select its VIDEO channel or AV mode, then make sure that all necessary stations have been stored in the recorder's memory by using the **TV PROG** button(s).
- If station names (ID — ☞ pg. 46) have also been stored in the recorder's memory, the station name will be displayed at the top left corner of the screen for about 5 seconds when the recorder is tuned to a different station.
- If you want to set the tuner manually such as to add or skip channels, to change preset positions, or to set or change station names, see pages 42 – 45.

2 Perform "Clock Set" on page 48, then "Video Plus+ Setup" on page 10 to check if the Guide Program numbers have been set correctly.

If both auto channel set and auto clock set have failed:

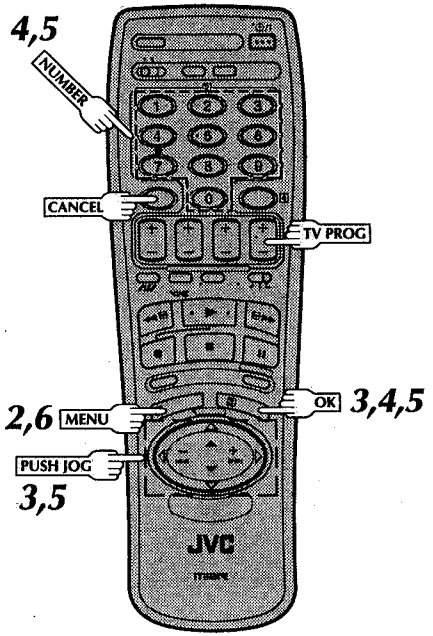
1 Make sure the TV aerial cable is connected properly to the recorder and turn off the recorder power once, then turn the recorder power back on again.
- The recorder will try Auto Set Up again.

IMPORTANT

- Depending on the reception conditions, the station names may not be stored correctly, and auto Guide Program Number Set may not work properly. If the Guide Program numbers are not set properly, Video Plus+ timer recording (☞ pg. 24) will not work correctly; be sure to check if the Guide Program numbers have been set correctly (☞ pg.10, "Video Plus+ Setup").
- Since your video recorder memorizes all detected stations even if the reception condition is poor, some of those stored stations may produce a noisy picture. To delete those stations, ☞ "Delete A Channel" on page 43.

Video Plus+ Setup

Turn on the TV and select the VIDEO channel (or AV mode).



IMPORTANT

As Channel 5 has started its service on March 30th 1997, the Guide Program Numbers of some stations have been changed as follows:

Station Name	Guide Program Number	
	Before	Now
CHANNEL 5	—	5
RTE1 (IRELAND)	5	6
NETWORK 2 (IRELAND)	6	7

For details, you can consult the JVC Customer Liaison at: 0181-208-7654

With Video Plus+, timer programming is greatly simplified because each TV programme has a corresponding code number which your recorder is able to recognise.

NOTE:

"Guide Program (GUIDE PROG) number" refers to the assigned TV station numbers, according to broadcast area, for Video Plus+ timer recording.

IMPORTANT

Perform the following procedure after Auto Set Up on page 8 and/or the channel setting steps on pages 40 – 45, and after the Clock Set procedure on page 48.
After setting the Guide Program numbers, the station names and preset positions may be incorrect if you stored or skipped channels. In this case, re-perform Guide Program number setting.

For Video Plus+ timer recording to work correctly, it is necessary for the Guide Program to be set properly. This should have already been performed during Auto Set Up or Auto Channel Set, but the following steps will help you check the settings and make corrections if necessary.

Guide Program Number Set

1 MAKE LIST OF STORED STATION NAMES AND PRESET POSITIONS

(Ex.)

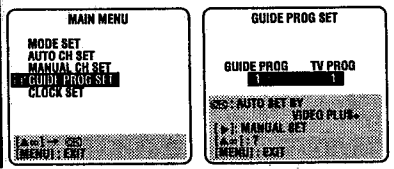
Preset position	Station name
1	BBC1
2	BBC2
3	ITV
4	CH4
5	CH5

2 ACCESS MAIN MENU SCREEN

Press **MENU** twice.

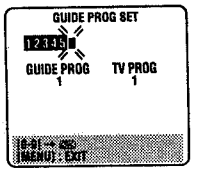
3 ACCESS GUIDE PROG SET SCREEN

Press **PUSH JOG** △▽ to move the highlight bar (pointer) to "GUIDE PROG SET", then press **OK**. The Guide Prog. Set screen appears.



4 ENTER PLUSCODE NUMBER

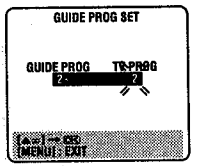
Press **OK**, and a cursor appears above "GUIDE PROG". Then, using the **NUMBER** keys, input the PlusCode number (found in most TV listings) of a program scheduled to be broadcast on each station on the list from step **1**, starting at the top. If you enter the wrong number, press **CANCEL** to backspace and input the correct number.



5 CONFIRM PRESET POSITION NUMBER

Press **OK** and the display under "TV PROG" starts to flash.

If the flashing number under "TV PROG" agrees with the preset position . . .
. . . press **OK**.
If the numbers do not agree . . .
. . . input the preset position using **PUSH JOG**△▽ or the **NUMBER** keys, then press **OK**.



- If you input the PlusCode number of a program that has already aired, "ERROR" appears on screen for a few seconds. Input the correct PlusCode number.
- Repeat steps **4** and **5** as necessary.

6 CLOSE MENU

Press **MENU** and selection is complete.

If you already know the Guide Program number for a station . . .
1– After step **3**, press **PUSH JOG** ▷.
- The GUIDE PROG number starts to flash.

2– Enter the Guide Program number using the **NUMBER** keys or **PUSH JOG**△▽, then press **PUSH JOG** ▷.
- The TV PROG number starts to flash.

3– Enter the preset position using the **NUMBER** keys or **PUSH JOG**△▽, then press **PUSH JOG** ◁.
- Repeat **2** and **3** as necessary.

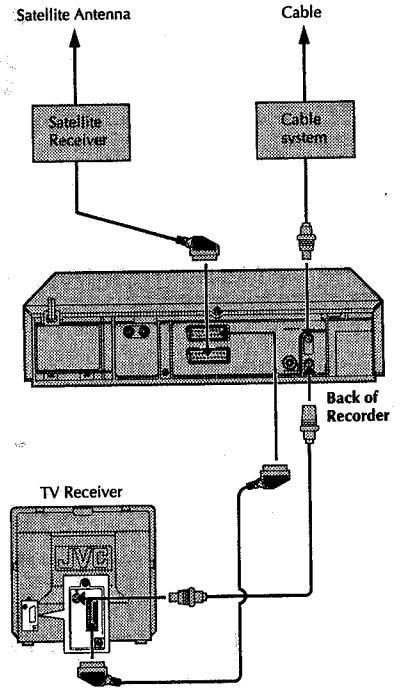
4– Press **MENU**.

NOTES:

- *If you own a satellite receiver, connect it to the AV2 IN connector on the back of the recorder. Then, in step 5 above, set the input mode to "AUX2" by pressing **NUMBER** key "0" or **TV PROG** +/–.*
- *If you're receiving broadcasts via a cable box through preset "6" (example) on your recorder, set "TV PROG" for "6" in step 5.*
- *After selecting the programme you wish to record from your cable system or satellite receiver, set the system's timer — if your cable or satellite receiver does not have a timer, leave it switched on.*

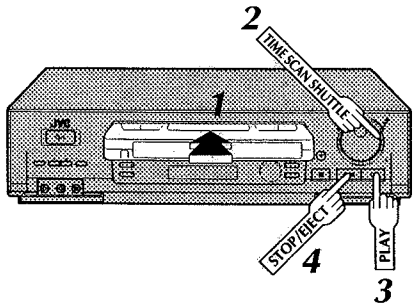
When Using A Satellite Receiver And/Or Cable System

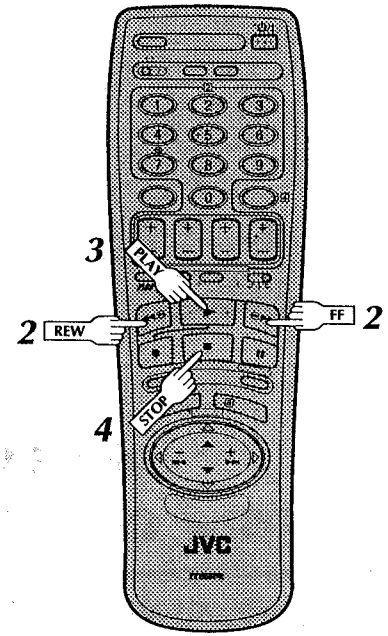
THE SATELLITE RECEIVER IS SHOWN CONNECTED TO THE "AV2 IN" (SCART) CONNECTOR AND THE CABLE SYSTEM CONNECTED VIA THE AERIAL SOCKET AND TUNED TO, FOR EXAMPLE, PRESET POSITION 6 ON YOUR TV.



Basic Playback

Turn on the TV and select the VIDEO channel (or AV mode).





The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.

1 LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is point toward the recorder. Don't apply too much pressure when inserting.

- The recorder power comes on automatically and the counter is reset to 0:00:00.
- If the record safety tab has been removed, playback begins automatically.

2 FIND PROGRAMME START POINT

If the tape is advanced past the start point, press **REW** or turn the **TIME SCAN SHUTTLE** ring to the left. To go forward, press **FF** or turn the **TIME SCAN SHUTTLE** ring to the right.

3 START PLAYBACK

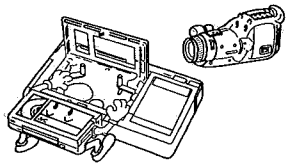
Press **PLAY**. "BEST" appears blinking in the recorder's display panel during automatic tracking (☞ pg. 22).

- Playback picture quality of LP recordings will not be as high as SP recordings.

4 STOP PLAYBACK

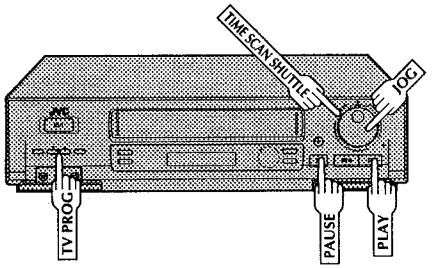
Press **STOP** on the remote or **STOP/EJECT** on the recorder's front panel. Then press **STOP/EJECT** to remove the cassette.

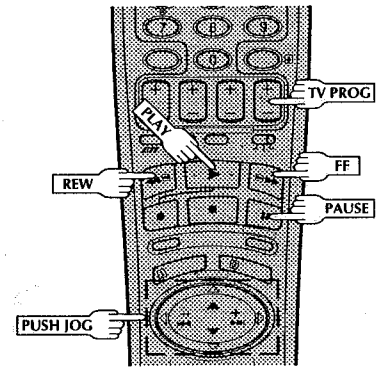
Usable cassettes



- Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.
- This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Playback Features





High-Speed (Turbo) Search

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still picture, press **FF** for forward high-speed search, or **REW** for reverse high-speed search.

To resume normal playback, press **PLAY**.

NOTES:

- *For short searches, press and hold **FF** or **REW** for over 2 seconds. When released, normal playback resumes.*
- *Picture may not appear during search with an LP-recorded tape.*
- *In the search, still, or frame by frame playback mode, the picture may be distorted, and there may be a loss of colour.*

Take advantage of special functions possible with the recorder's controls or the remote control.

Still Picture/Frame-By-Frame Playback

1 PAUSE DURING PLAYBACK

Press **PAUSE**. If there is vertical jitter, use the **TV PROG** buttons to correct the picture.

- During still picture, the sound from the previous 3 seconds (approx.) will be played back repeatedly (provided there was at least 6 seconds of normal playback prior to engaging the still picture mode).
- The "TIME SCAN AUDIO" must be set to "ON", or the sound will not be heard (☞ pg. 19).

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

OR

Press **PAUSE**.

OR

Press **PUSH JOG** ◁ or ▷.

To resume normal playback, press **PLAY**.

Slow Motion

1 ACTIVATE SLOW-MOTION PLAYBACK

Turn the **TIME SCAN SHUTTLE** ring to the left or press **PUSH JOG** ◁ during playback to decrease speed in the forward direction. To play in reverse slow-motion (and in reverse play mode), continue to turn the **TIME SCAN SHUTTLE** ring to the left or press **PUSH JOG** ◁ after selecting all the forward direction slow-motion modes.

OR

During still picture, turn the **TIME SCAN SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion.

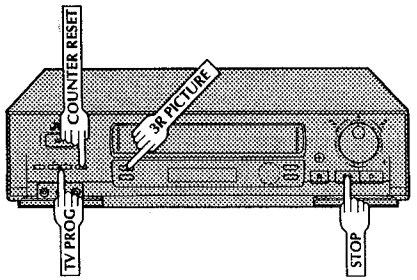
OR

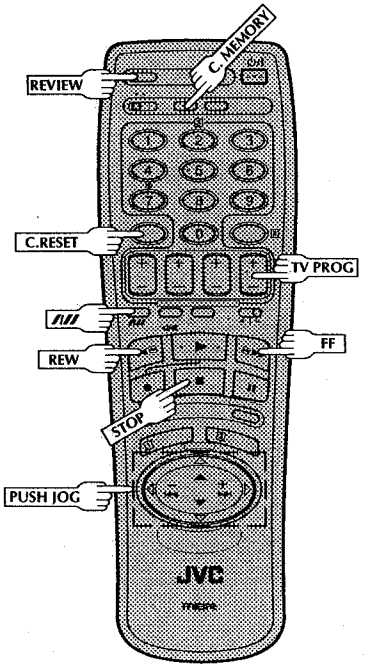
During still picture, press and hold **PAUSE** for 2 seconds, then release. Press and release again to return to still picture.

OR

During still picture, press and hold **PUSH JOG** ◁ or ▷. Release to return to still picture.

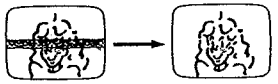
To resume normal playback, press **PLAY**.





Manual Tracking

Your video recorder is equipped with automatic tracking control. During playback, you can override this and adjust the tracking manually by pressing the **TV PROG** buttons.



1 OVERRIDE AUTOMATIC TRACKING

Press /// on the remote to engage manual tracking.

2 ADJUST TRACKING MANUALLY

Press **TV PROG** + or – to adjust tracking.

3 RETURN TO AUTOMATIC TRACKING

Press /// on the remote to re-engage automatic tracking.

NOTE:

When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

3R Picture

3R(= Resolution and Response Recovery technology) maximises sense of resolution and sharpens image edges to make playback picture look better focused.

1 ACTIVATE 3R PICTURE

Press **3R PICTURE**. The button will light.

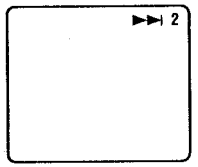
- To turn off 3R Picture, press **3R PICTURE** again so that the light goes off.
- Normally it is recommendable to keep 3R Picture ON (with the button lit).
- Depending on the type of tape used, picture quality may be better with 3R Picture set to off.
- If you use this recorder as the player for editing, be sure to turn off 3R Picture before starting.
- The setting will remain effective even though you turn on/off the recorder.

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.

NOTE:

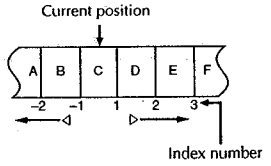
Before starting, make sure the recorder is in the Stop mode.



1 ACTIVATE INDEX SEARCH

Press **PUSH JOG** ◁ or ▷ (I◀◀ or ▶▶I). "I◀◀ 1" or "▶▶I 1" is displayed on screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press **PUSH JOG** ◁ or ▷ repeatedly until the correct index number is displayed.
  Ex.: To locate the beginning of B from the current position, press **PUSH JOG** ◁ twice.
  To locate the beginning of D from the current position, press **PUSH JOG** ▷ once.



- When the specified index code is located, playback begins automatically.

Instant ReView

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last timer-recorded programme. If you have several programmes recorded, you can easily access any of them.

NOTE:

Before starting, make sure that the recorder is off and that the Timer mode is disengaged.

1 ACTIVATE INSTANT REVIEW

Press **REVIEW**. The recorder power comes on and the recorder searches for the index code indicating the start of the last timer-recorded programme. Once it's found, playback begins automatically.
The front display panel tells you how many programmes have been recorded. If you have, for example, 3 programmes, "REVIEW" and "3" appear and blink. To watch the first of the 3 programmes, press **REVIEW** three times. The recorder searches and begins playback automatically. You can access a programme as far as 9 index codes away from the current tape position.

NOTES:

- *Instant ReView is not possible while the recorder is in the Timer mode.*

Counter Memory

Returns to the counter reading of "0:00:00" to conveniently find a specific place on the tape automatically.

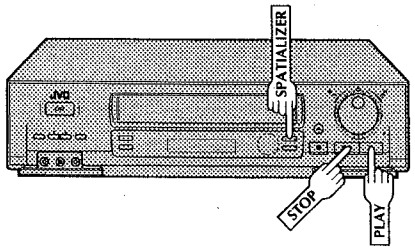
1 SET COUNTER MEMORY

Press **C. (COUNTER) RESET** during playback at a point you wish to locate later. The counter reads "0:00:00". Then press **C.MEMORY**, and "M" appears in front of the counter digits.

2 ACTIVATE COUNTER MEMORY

When you wish to return to the designated point, press **STOP** and then **REW** or **FF**.

- The tape rewinds or fast-forwards and stops at about 0:00:00 automatically.
- To cancel Counter Memory, press **C.MEMORY** again.



Spatializer®

This feature expands sound field when you play back any stereo source or view a stereo programme while recording it.
*Spatializer® has no effect on recording quality.

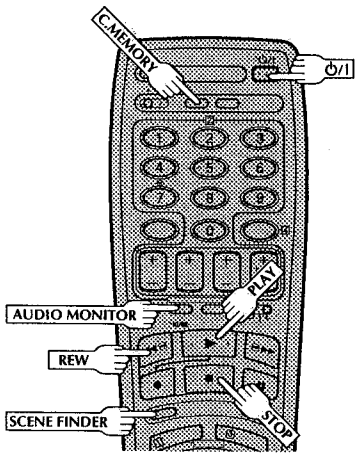
1 ACTIVATE SPATIALIZER®

Press **SPATIALIZER**; the current setting will be displayed on the screen for about 5 seconds. Pressing **SPATIALIZER** while the screen shows the display changes the setting.

- To view a stereo programme such as movies or music, select "SPATIALIZER" to create more spacious sound.
- To view a monaural programme, select "SPATIALIZER→ST" which simulates a stereo effect.
- Select "SPATIALIZER OFF." to turn off Spatializer® if the sound becomes unnatural with either "SPATIALIZER" or "SPATIALIZER→ST" selected.
- If your TV is equipped with 3D-PHONIC and if you use both Spatializer® and 3D-PHONIC at the same time, the sound may become unnatural; set either function to "OFF".
- The setting will remain effective even though you turn on/off the recorder.

NOTES:

- *Spatializer® is effective only with a stereo TV.*
- *The setting cannot be changed during search, still, frame-by-frame playback or slow motion mode.*
- *When this recorder is used as the player for editing, the recorded audio will correspond to the Spatializer® setting.*



Soundtrack Selection

Your video recorder is capable of recording three soundtracks (HI-FI L, HI-FI R and NORM) and will play back the one you select.

During Playback

Pressing **AUDIO MONITOR** on the remote control changes the soundtrack being played back as follows:

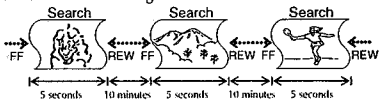
TRACK		USE
Recorder's Front Panel	On-Screen Display	
L + R	HI FI L R	For Hi-Fi stereo tapes
L	HI FI L	For main audio of Bilingual tapes
R	HI FI R	For sub audio of Bilingual tapes
NORM	NORM	For audio-dubbed tapes
L + R + NORM	HI FI NORM	For audio-dubbed tapes

NOTES:

- *"L + R" should normally be selected. In this mode, Hi-Fi stereo tapes are played back in stereo, and the normal audio track is played back automatically for tapes with only normal audio.*
- *For instructions on recording NICAM stereo and bilingual programmes, refer to page 37.*
- *Bilingual programmes are not currently broadcast in the U.K.*
- *"O.S.D." must be set to "ON" or the on-screen displays will not appear (☞ pg. 36).*

Scene Finder

This function helps you check contents of unlabeled recorded tapes at the touch of a single button.



NOTE:

Scene Finder cannot be used when the recorder is in the Record mode.

1 ACTIVATE SCENE FINDER

Press **SCENE FINDER**. The recorder starts forward search for 5 seconds and then fast-forwards 10 minutes on the counter. This cycle is repeated until the end of the tape is reached.

- To start Scene Finder in the reverse direction, press **SCENE FINDER** and then press the **REW** button within 2 seconds. This cycle is repeated until the beginning of the tape.
- During Scene Finder, the following indications appear on the display panel:

2 STOP SCENE FINDER

Press **STOP**.

NOTES:

- *During Scene Finder search, you can also hear the tape sound. During fast forward or rewind, you hear the current TV sound instead.*
- *During Scene Finder, the sound can be heard regardless of "TIME SCAN AUDIO" setting.*
- *Scene Finder does not function during Index Search.*

Next Function Memory

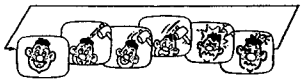
You can set your recorder's power to go off automatically after the tape is fully rewound. Before starting, make sure the recorder is in the Stop mode.
For Automatic Power Off After Tape Rewind . . .
. . . press **REW**, then press ⏻/I within 2 seconds.

NOTE:

*If you want the power to be turned off automatically when the counter reads "0:00:00" (instead of at the beginning of the tape), press **C.MEMORY** so that the "M" mark appears before pressing **REW**.*

Repeat Playback

Your video recorder can automatically play back the whole tape 20 times repeatedly.



1 START PLAYBACK

Press **PLAY**.

2 ACTIVATE REPEAT PLAYBACK

Press **PLAY** and hold for over 5 seconds, then release.

- The Play indicator (▷) on the display panel blinks slowly.
- The tape plays 20 times automatically, and then stops.

3 STOP PLAYBACK

Press **STOP** at any time to stop playback.

NOTE:

*Pressing **PLAY**, **REW**, **FF** or **PAUSE** also stops Repeat Playback.*

NTSC Playback

Your video recorder is equipped with NTSC circuitry that can play back NTSC tapes.

1 LOAD A CASSETTE

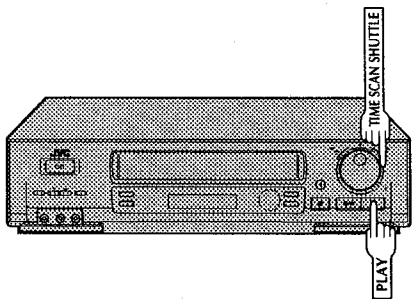
Insert a cassette recorded in NTSC.

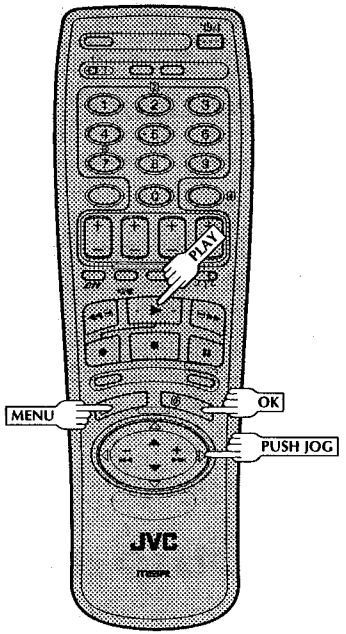
2 START PLAYBACK

Press **PLAY**.

- "NTSC" appears on the screen for about 5 seconds.
- Some TVs shrink the picture vertically and place black bars at the top and bottom of the screen. This is not a malfunction on the part of either the video recorder or the TV.
- The picture may roll up and down. This can be corrected using the V-HOLD control found on some TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)
- The counter and tape remaining time readings will be incorrect.
- During search, still, or frame-by-frame playback, the picture will be distorted, and there may be a loss of colour.
- Depending on the type of TV, the top and bottom portions of superimposed displays may be cut off during NTSC playback.

TimeScan





Your recorder is equipped with the TimeScan function. TimeScan allows noise free pictures to be displayed on your TV screen in the forward and reverse search modes. Audio will be played back at normal speed during any of the TimeScan modes (☞ pg. 19). TimeScan allows you to view a program in search mode while listening to the audio. The default setting for TimeScan audio is ON. (☞ pg. 19)

NOTES:

- *The "TIME SCAN AUDIO" must be set to "ON", or the sound will not be heard in TimeScan mode.*
- *The audio will not synchronize with the video in TimeScan modes.*
- *In Pause mode 3 seconds (approx.) of audio will be played back repeatedly. (☞ pg. 13)*
- *In TimeScan search modes some of the audio information will not be played so that the audio can keep up with the video.*
- *TimeScan does not work with NTSC playback.*

Audio signal during TimeScan

Playback tape ① ② ③ ④ ⑤

Sound of ①, ③ and ⑤ is heard.
Sound of ② and ④ is not heard.
Output audio signal is normal (monaural) sound.

Variable-Speed Search/ Reverse Play

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the recorder's **TIME SCAN SHUTTLE** ring. It remains at that position even after you release it. Each time it passes a click position, the playback speed changes.
(Refer to the chart on pg 19 for playback speeds).

OR

During playback, press **PUSH JOG** ◁ or ▷.

- The more times you press, the faster the playback picture moves.
- To decrease speed, press the button for the opposite direction.
(Refer to the chart on pg 19 for playback speeds).

To resume normal playback, press **PLAY**.

TimeScan

Names of special-effects playback	Reverse				Forward		
	Search	Play	Slow-Motion	*Still	Slow-Motion	Play	Search
Speed SP	-9x -7x -5x -3x	-1x	-1/6x -1/18x	0	1/18x 1/6x	1x	2x 3x 5x 7x 9x
Speed LP	-7x -3x		-1/6x -1/18x	0	1/18x 1/6x	1x	2x 5x 9x
Audio output	Audio is output.		Audio is not output.	Audio is output.	Audio is not output.	Audio is output.	

* Still mode cannot be engaged using the remote control's **PUSH JOG** button.

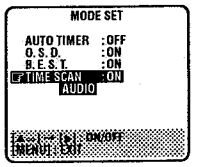
- The speed is shown during TimeScan in the upper right corner of the TV screen for approx. 5 seconds. (The display may be distorted.)
- To resume normal playback, press **PLAY**.
- When using the recorder's **TIME SCAN SHUTTLE** ring, the playback speed may not change in the correct step if it is turned too fast.
- Picture and audio may become distorted when the recording speed changes. When this happens, resume normal playback once, and then try using TimeScan again.
- The picture may be noisy or there may be a loss of colour when you change the playback speed. (More noise will appear with LP recordings.)
- Noise may appear or the upper part of the picture may be distorted during still, frame-by-frame playback, 2x search of LP recordings, or depending on the tape being used.
- Picture may appear distorted in comparison to normal playback.
- In TimeScan mode there will be a time lag between the video and the audio and noise may appear in the audio signal.
- TimeScan sound quality will differ in comparison to normal playback.
- When the playback direction is reversed, it takes approximately 6 seconds until sound is heard.

If you don't want to hear TimeScan audio, set the "TIME SCAN AUDIO" to OFF. (See below)

TimeScan Audio

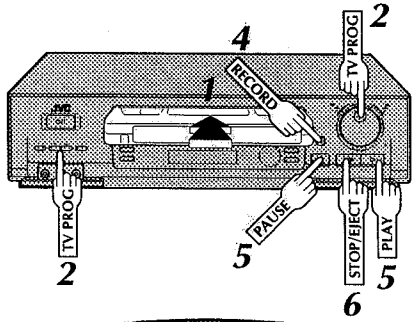
The audio output can be set ON/OFF during TimeScan. Select ON/OFF as required.

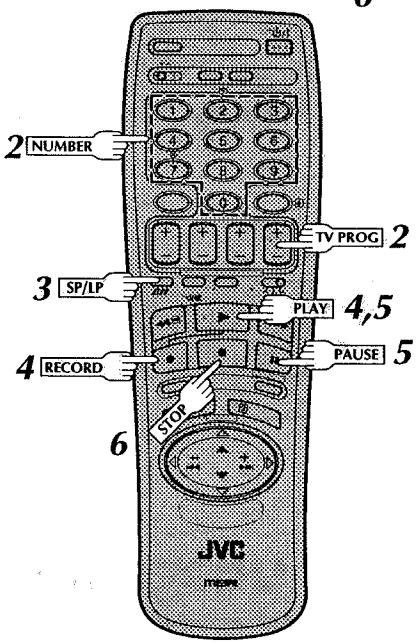
1 Press **MENU** twice to access the Main Menu screen.
2 Move the highlight bar (pointer) to "MODE SET" by pressing **PUSH JOG** △▽, then press **OK**.
3 Move the highlight bar (pointer) to "TIME SCAN AUDIO" by pressing **PUSH JOG** △▽, then press **PUSH JOG** ▷ to select "ON" or "OFF".
4 Press **MENU** to return to the normal screen.



Basic Recording

Turn on the TV and select the VIDEO channel (or AV mode).





TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. You can "capture" a TV programme using your video recorder.

1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

- The counter is reset to 0:00:00 and the recorder power comes on automatically.

2 CHOOSE A PROGRAMME

Press **TV PROG +/–** or the **NUMBER** keys to select the preset you wish to record.

- The **TV PROG** dial can also be used to select a preset.

3 SET TAPE SPEED

Press **SP/LP (///)**. Check the SP/LP indicator on the recorder display panel to confirm the selected tape speed.

- Picture quality of LP recordings will not be as high as SP recordings.

4 START RECORDING

Press and hold **RECORD** and press **PLAY** on the remote control, or press **RECORD** on the recorder.

B.E.S.T. takes place at the beginning of both the first SP and the first LP recording after inserting the cassette (☞ pg. 22).

5 PAUSE/RESUME RECORDING

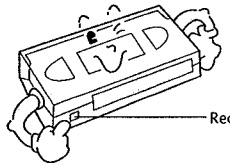
Press **PAUSE**. Press **PLAY** to resume recording.

6 STOP RECORDING

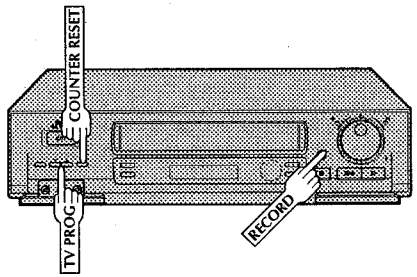
Press **STOP** on the remote control or **STOP/EJECT** on the recorder. Then press **STOP/EJECT** to remove the cassette.

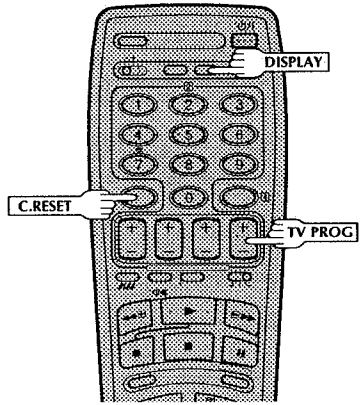
Accidental erasure prevention

- To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Recording Features





Tape Remaining Time

1 DISPLAY REMAINING TIME

Press **DISPLAY** until the time remaining on the tape appears.

- By pressing the **DISPLAY** button, you can change the display to show the counter reading, preset position, clock time* or tape remaining time.

** Preset position is not displayed during playback.*

NOTE:

Depending on the type of tape used, there may be times when the tape remaining time reading may not appear right away, or is not correct. "- - : - -" may sometimes appear, or the display may blink on occasion.

Record One Programme While Watching Another

1 SELECT PRESET TO WATCH

Once recording is in progress, all you need to do is to set the preset controls on the TV for the station you wish to view.

- The programme selected with the TV's preset controls appears on the TV screen while the one selected with the recorder's **TV PROG** buttons is recorded on the tape.

Elapsed Recording Time Indication

You can check the exact time of a recording.

1 SET COUNTER DISPLAY

Press **DISPLAY** until a counter reading appears on the dispay panel.

2 RESET COUNTER

Press **C. (COUNTER) RESET** before starting recording or playback.

- The counter is reset to "0:00:00" and shows the exact elapsed time as the tape runs.

Instant Timer Recording (ITR)

This easy method lets you record for from 30 minutes to 6 hours (selectable in 30-min. increments), and shuts the recorder off after recording is finished.

1 START RECORDING

Press **RECORD** on the recorder.

2 ENGAGE ITR MODE

Press **RECORD** again. "O" blinks and 0:30 appears on the front display panel.

3 SET RECORDING DURATION

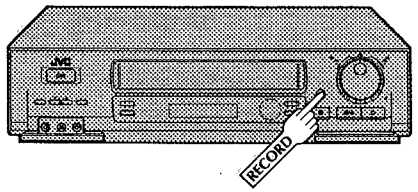
If you want to record for more than 30 minutes, press **RECORD** to extend the time. Each press extends recording time by 30 minutes.

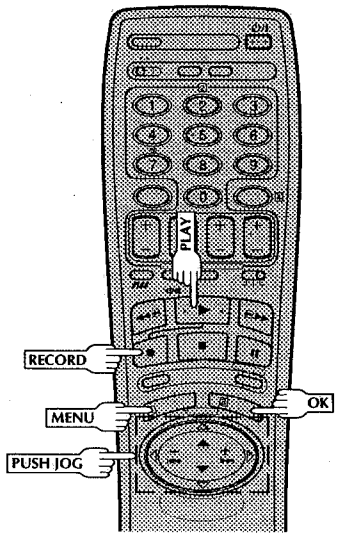
NOTE:

*You can only perform ITR using the **RECORD** button on the recorder's front panel.*

B.E.S.T. Picture System

Turn on the TV and select the VIDEO channel (or AV mode).





Display Panel Indication

As the tape check progresses, the "– –" marks on the display panel increase upward. Once the "BEST" indicator starts blinking, the check is complete.

The B.E.S.T. (Biconditional Equalised Signal Tracking) system checks the condition of the tape in use during recording and playback, and compensates to provide the highest-possible recording and playback pictures. The default setting for both recording and playback is "ON".

Recording

1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

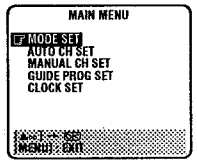
- The recorder power comes on automatically.

2 ACCESS MAIN MENU SCREEN

Press **MENU** twice.

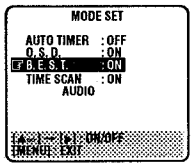
3 ACCESS MODE SET SCREEN

Move the highlight bar (pointer) to "MODE SET" by pressing **PUSH JOG** △▽, then press **OK**.



4 CONFIRM B.E.S.T. STATUS

The default setting is "ON". If this is the case, go to step 4. If not, press **PUSH JOG**▽ to move the highlight bar (pointer) to "B.E.S.T.", then press **PUSH JOG** ▷ to set to "ON".



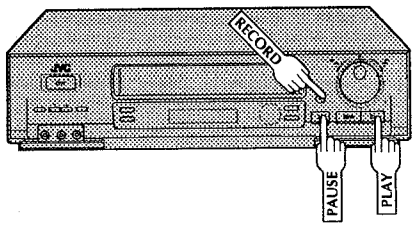
5 RETURN TO NORMAL SCREEN

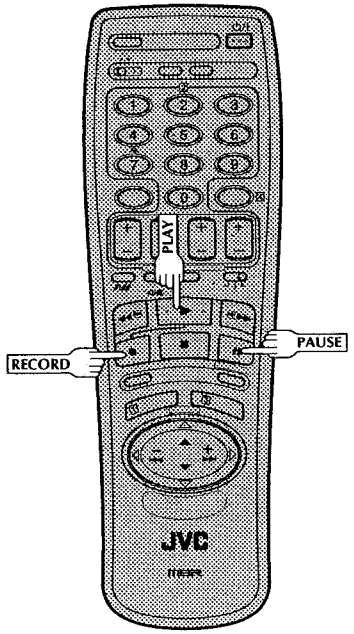
Press **MENU**.

6 START RECORDING

Press and hold **RECORD** and press **PLAY** on the remote, or **RECORD** on the recorder.

- The recorder spends approximately 7 seconds assessing the condition of the tape, then begins recording.
- When the "BEST" indicator begins blinking, that means adjustment is complete.
- Pressing the recorder's **RECORD** button while "BEST" is displayed does not start Instant Timer Recording (☞ pg. 21).





NOTES:

- *The B.E.S.T. system works for both SP and LP modes only after a tape has been inserted and the Record mode is first initiated. It does not work during recording.*
- *In the case of timer recording, the B.E.S.T. system works before recording is initiated.*
- *Once the cassette is ejected, the B.E.S.T. data is cancelled. The next time the cassette is used for recording, B.E.S.T. is re-performed.*

ATTENTION:

Since the B.E.S.T. system works before recording actually starts, there is a delay of approximately 7 seconds after ***RECORD*** *and* ***PLAY*** *on the remote are pressed, or* ***RECORD*** *on the recorder is pressed. To make sure you record the desired scene or programme in its entirety, first perform the following steps:*

1) Press and hold ***PAUSE*** *and* ***RECORD*** *to engage the RECORD PAUSE mode.*
- *The recorder then automatically checks the condition of the tape and, after approximately 7 seconds, re-enters RECORD PAUSE.*

2) Press ***PLAY*** *to start recording.*
- *If you want to bypass the B.E.S.T. system and begin recording immediately, set "B.E.S.T." to "OFF" in step 4 on page 22.*

Playback

The recorder assesses the quality of the tape once you initiate playback. When watching a tape recorded with "B.E.S.T." set to "ON", it is recommended that you leave B.E.S.T. on during playback as well.

1 START PLAYBACK

Press **PLAY**.

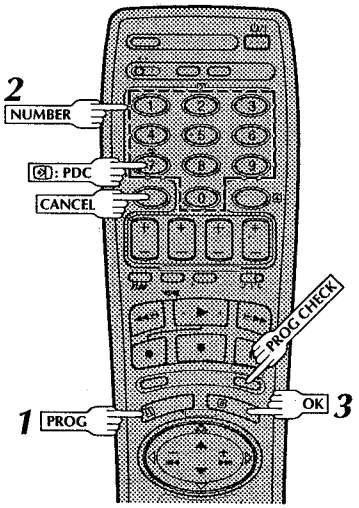
- The recorder adjusts the playback picture quality based on the quality of the tape in use.
- B.E.S.T. is active during Auto Tracking. "BEST" appears blinking on the recorder's display panel.

NOTES:

- *When watching a rental tape or one recorded on another video recorder, or when using this recorder as the player for editing, set B.E.S.T. to your preference by performing steps 2 through 5 on page 22.*
- *"BEST" only appears at the beginning of automatic tracking. Even though it doesn't appear after that, the B.E.S.T. function is operative.*

Video Plus+ Timer Recording

Before performing Video Plus+ Timer Recording:
- Be sure to read "Video Plus+ Setup" (☞ pg. 10).
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).



PDC Recording

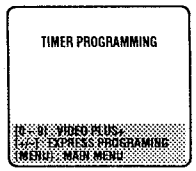
Now available from some TV stations, PDC (Programme Delivery Control) is a service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over advertised times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

NOTES:

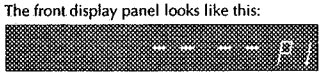
- *PDC recording is also possible when a satellite receiver or a cable system is connected to AV2 IN on your recorder.*
- *PDC recording is also possible via the AV1 IN/OUT connector and the front panel connectors.*

1 ACCESS TIMER PROGRAMMING SCREEN

Press **PROG**

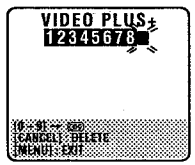


The front display panel looks like this:



2 ENTER PLUSCODE NUMBER

Press the **NUMBER** keys to enter the PlusCode number of a programme you wish to record.



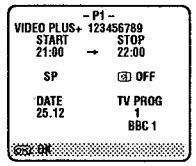
- If you make a mistake, press **CANCEL** to backspace and then input the correct number.

The PlusCode number you enter appears on the front display panel:

The display panel can show only a 4-digit number.

3 ACCESS VIDEO PLUS+ PROGRAM SCREEN

Press **OK**, and the Video Plus+ Program screen appears (if you're just starting out, "P1" appears).

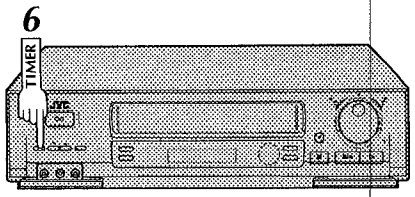


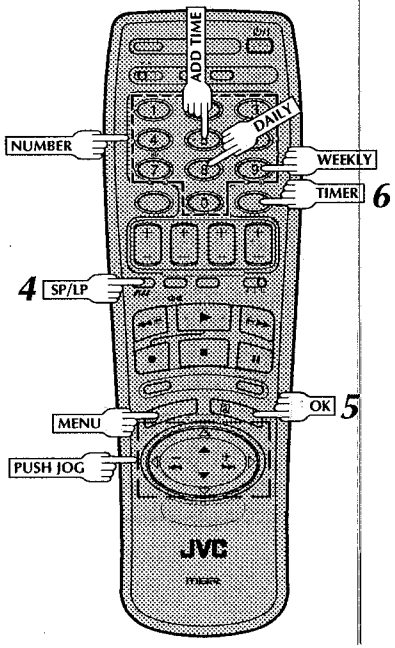
The display panel shows the programme start time. Pressing **PROG CHECK** changes the display to the programme stop time, then the date and preset position.

IMPORTANT
Be sure to confirm the setting of PDC recording.
- If "⊡ ON" is displayed on the screen or "⊡" is lit on the display panel, PDC is set to ON.
- If "⊡ OFF" is displayed on the screen or "⊡" is not lit on the display panel, PDC is set to OFF.

To change the setting, press ⊡: **PDC** (**NUMBER** key "7").
☞ "PDC Recording" in the left column.

- Make sure the preset position number you wish to record is displayed; if not, see "Video Plus+ Setup" on page 10 and set the Guide Program number for that PlusCode number correctly.
- If the number you entered is invalid, "ERROR" appears on the screen and "Err" appears on the display panel. Press **CANCEL** to backspace and input a valid PlusCode number.
- If "ERROR=GUIDE PROG" appears on the screen, see "ATTENTION – Regarding Guide Program Number Set" on page 25.





Satellite Receiver Users
To timer-record a satellite broadcast using Video Plus+, perform steps **1** – **6** and, before the selected programme begins, select the appropriate channel on the satellite receiver. Then set the receiver's timer. If your satellite receiver doesn't have a timer, leave the unit's power switched on.

4 SET TAPE SPEED

Press **SP/LP** (▮▮▮) to set the tape speed.

5 RETURN TO NORMAL SCREEN

Press **OK**.

- Repeat steps **1** – **5** for each additional programme.

6 ENGAGE RECORDER'S TIMER MODE

Press **TIMER**. The recorder turns off automatically.

NOTE:

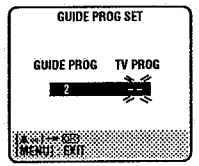
To Delay The Stop Time . . .
. . . press **ADD TIME** after pressing **OK** in step **3**. Each time you press, the Stop time is delayed by 5 minutes (meaning that 5 minutes of recording time is added). You can easily compensate for anticipated programme schedule delays this way.

To Timer-Record Weekly Or Daily Serials . . .
. . . after pressing **OK** in step **3**, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday – Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.

You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 28).

ATTENTION

Regarding Guide Program Number Set
"ERROR=GUIDE PROG" appears after performing step **3** on the previous page if the Guide Program number for the PlusCode number you entered has not been set.
- If the recorder is in the stop or rewind or fast-forward mode, the following screen will appear with "– –" under "TV PROG" flashing.
  - Press the **NUMBER** keys or **PUSH JOG** △▽ to input the preset position number you recorder receives that station on, then press **OK**.



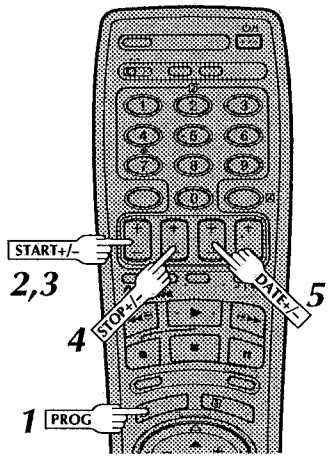
(Ex.) To timer-record a BBC2 programme with Video Plus+
* If your recorder receives BBC2 on the preset position 2, press **OK** after entering "2".

  - Press **MENU**, then try again from step **1**.
- If the recorder is in a mode other than the above mentioned modes, press **MENU** first and input the correct Guide Program number for that PlusCode number (☞ pg. 10, "Video Plus+ Setup"), then try again from step **1**.

Regular Timer Programming

Remember, the clock must be set before you can progamme the timer (☞ pg. 48).

Before performing the following steps:
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).



PDC Recording

Now available from some TV stations, PDC (Programme Delivery Control) is a service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over advertised times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

NOTES:

- *Set the start time (PDC time) exactly as advertised in the TV listing. A different time than advertised will result in no recording.*
- *PDC recording is also possible when a satellite receiver or a cable system is connected to AV2 IN on your recorder.*
- *PDC recording is also possible via the AV1 IN/OUT connector and the front panel connectors.*

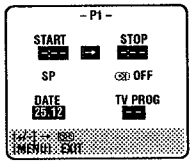
If you don't know the PlusCode number for the programme you wish to record, use the following procedure to set your recorder to timer-record the programme.

1 ACCESS TIMER PROGRAMMING SCREEN

Press **PROG**

2 ACCESS PROGRAMME SCREEN

Press **START +/–**. (If you're just starting out, "P1" appears.)

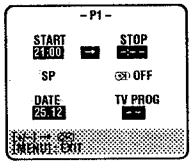


The front display panel looks like this:

3 ENTER PROGRAMME START TIME

Press **START +/–** to enter the time you want recording to start.

- Press and hold **START +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.



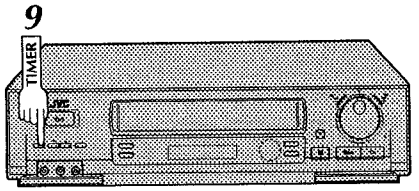
The front display panel looks like this:

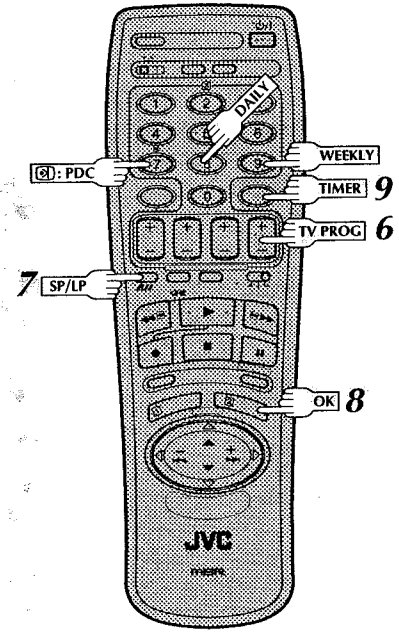
4 ENTER PROGRAMME STOP TIME

Press **STOP +/–** to enter the time you want recording to stop.

5 ENTER PROGRAMME DATE

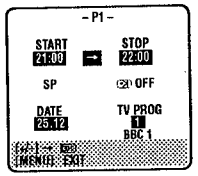
Press **DATE +/–**. (The current date appears on screen. The date you enter appears in its place.)





6 ENTER PRESET POSITION

Press **TV PROG +/–**.



IMPORTANT
Be sure to confirm the setting of PDC recording.
- If " ON" is displayed on the screen or " " is lit on the display panel, PDC is set to ON.
- If " OFF" is displayed on the screen or " " is not lit on the display panel, PDC is set to OFF.

To change the setting, press : **PDC** (**NUMBER** key "7").
☞ "PDC Recording" on page 26.

7 SET TAPE SPEED

Press **SP/LP** ( ) to set the tape speed.

8 RETURN TO NORMAL SCREEN

After confirming all information is correct, press **OK** and the normal screen appears.

- Repeat steps **1** – **8** for each additional programme.

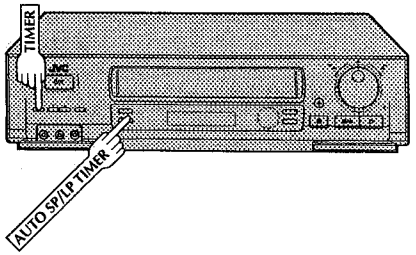
9 ENGAGE RECORDER'S TIMER MODE

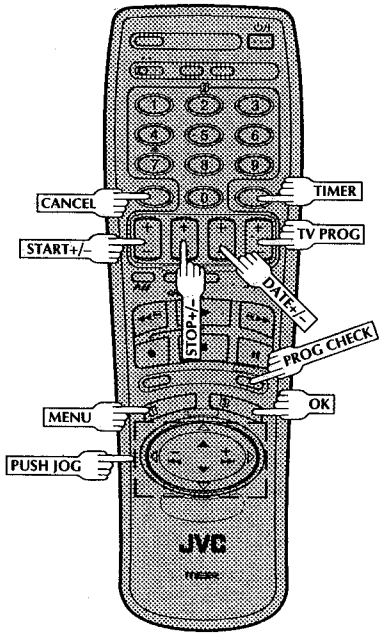
Press **TIMER**. The recorder turns off automatically.

To Timer-Record Weekly Or Daily Serials . . .
. . . anytime during steps **2** through **8**, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday – Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.

NOTES:

- *You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 28).*
- *To timer-record a satellite broadcast through a satellite receiver connected to the AV2 IN connector on the back of the recorder, in step **6** above, set "TV PROG" to "AUX2" by pressing **TV PROG** +/–. Before the selected programme begins, select the appropriate channel on the satellite receiver, then set the receiver's timer. If your satellite receiver doesn't have a timer, leave the unit's power switched on.*





Check And Cancel Programmes

1 ACCESS PROGRAMME DISPLAY AND/OR SCREEN

Press **PROG CHECK**.

- The display panel shows the programme start time. Pressing **OK** changes the display to the programme stop time, then the date and preset position.
- If the recorder is turned on and the TV is set to its VIDEO channel or AV mode, you can check program information on screen as well.
- Each time you press **PROG CHECK**, the next programme's information appears.

If All Information Is Correct . . .

. . . programming is completed.

If You Wish To Revise Data . . .

. . . with the recorder's power turned on, go to step 2.

If You Wish To Cancel A Program . . .

. . . with the recorder's power turned on, press **CANCEL**. All information you input is deleted.

2 REVISE PROGRAMME INFORMATION

Input the appropriate data using the **START +/–, STOP +/–, DATE +/–** and **TV PROG +/–** buttons on the remote control.

Timer Warning

If you have programmed your recorder to timer-record a programme or a series of programmes, a warning appears on screen to tell you that the recording is to start in 5 minutes.

NOTES:

- *The warning only appears if you're not in the Timer mode at that time.*
- *If this recorder is being used as the player for tape dubbing, the warning screen is recorded on the tape in the other video recorder.*

The warning blinks for the entire 5 minutes leading up to the start of timer recording. To clear the display, press **CANCEL**.

Auto Timer

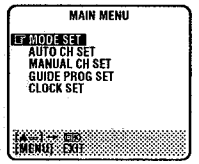
When the Auto Timer is set to ON the timer is automatically engaged when the recorder power is turned off and automatically disengaged when the recorder is powered back on.

1 ACCESS MAIN MENU SCREEN

Press **MENU** twice.

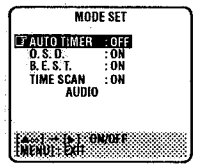
2 ACCESS MODE SET SCREEN

Press **PUSH JOG** △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK**.



3 SELECT MODE

Press **PUSH JOG** ▷ to select either "ON" or "OFF".



4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTE:

*For safety, when Auto timer is set to "OFF", all other recorder functions are disabled while the Timer mode is engaged. To disengage the timer, press **TIMER**.*

Auto SP/LP Timer

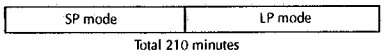
If, when recording in SP mode, there is not enough tape to record the entire programme, the recorder automatically switches to LP mode to allow complete recording.

1 ENGAGE AUTO SP/LP TIMER

Press **AUTO SP/LP TIMER** on the recorder front panel. The button lights up.

For Example . . .

Recording a program of 210 minutes in length onto a 180-minute tape

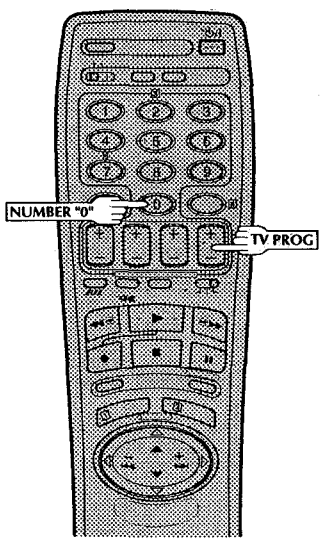


Make sure you press **AUTO SP/LP TIMER** before performing timer programming.

NOTES:

- *The Auto SP/LP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly with any tapes longer than E-180 as well as some tapes of shorter lengths.*
- *Even if, in step 1, you press **AUTO SP/LP TIMER** and the button lights up, that doesn't mean that the recorder will automatically change from SP to LP mode during the course of the recording. Watch the tape later to confirm.*
- *If you have programmed the recorder to timer-record 2 or more programs, the second programme and those thereafter may not fit on the tape if you engage the Auto SP/LP Timer mode. In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.*
- *There may be some noise at the point on the tape where the recorder switches from SP to LP mode.*
- *If you perform timer recording with both PDC and the Auto SP/LP Timer activated, and the programme goes beyond its originally scheduled length, there may be times when the programme cannot be recorded in its entirety.*

Edit To Or From Another Video Recorder



You can use your video recorder as the source player or the recording deck.

1 MAKE CONNECTIONS

Connect the player's 21-pin SCART connector to the recorder's 21-pin SCART connector as illustrated on the below.

When Using Your Video Recorder As The Source Player . . .

. . . connect its AV1 IN/OUT connector to the recording deck.

When Using Your Video Recorder As The Recording Deck . . .

. . . connect its AV2 IN or AV1 IN/OUT connector to the source player.

2 SET RECORDING DECK'S INPUT MODE

Set to AUX. With this video recorder, press **NUMBER** key "0" and/or **TV PROG** to select depending on the connector being used — "AU-1" for the AV1 IN/OUT connector, or "AU-2" for the AV2 IN connector.

3 START SOURCE PLAYER

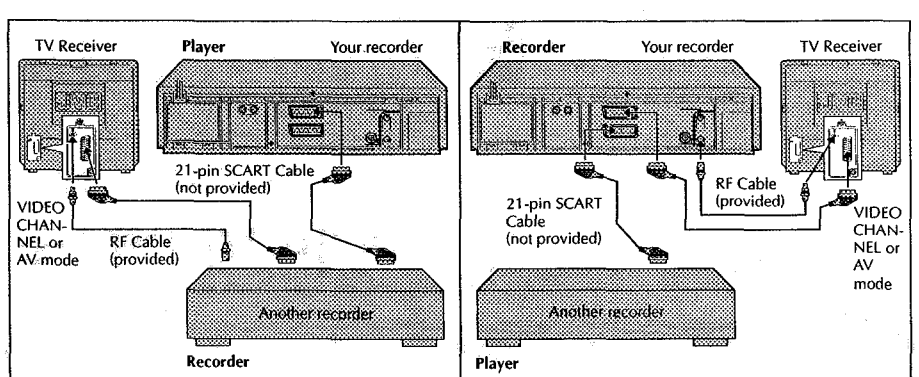
Engage its Play mode.

4 START RECORDING DECK

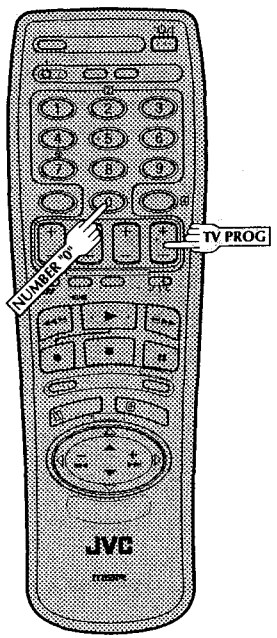
Engage its Record mode.

NOTES:

- *All necessary cables can be obtained from your dealer.*
- *If you use this recorder as the player for editing, be sure to turn off 3R Picture before starting. (☞ pg. 15)*



Edit From A Camcorder



You can use a camcorder as the source player and your video recorder as the recorder.

1 MAKE CONNECTIONS

Connect the camcorder's AUDIO/VIDEO OUT connectors to the recorder's front panel AUDIO/VIDEO input connectors.

- When using a monaural camcorder, connect its AUDIO OUT connector to the AUDIO L input connector on your recorder.
- When a Master Edit Control-equipped JVC camcorder is used, the camcorder is capable of controlling the recorder. Refer to the camcorder's instruction manual for operating procedure.

2 SET RECORDER'S INPUT MODE

Press **NUMBER** key "0" and/or **TV PROG** so that "F-AU" appears in place of a preset position number.

3 START CAMCORDER

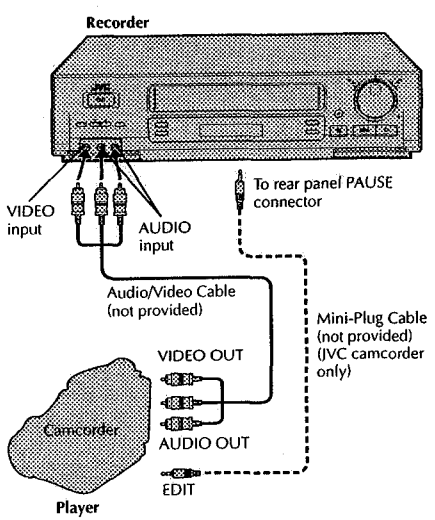
Engage its Play mode.

4 START RECORDER

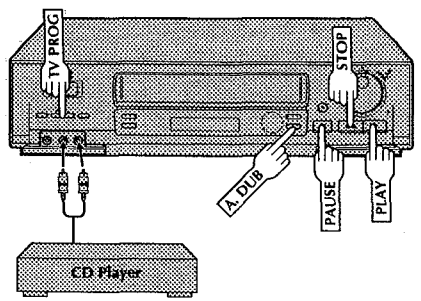
Engage its Record mode.

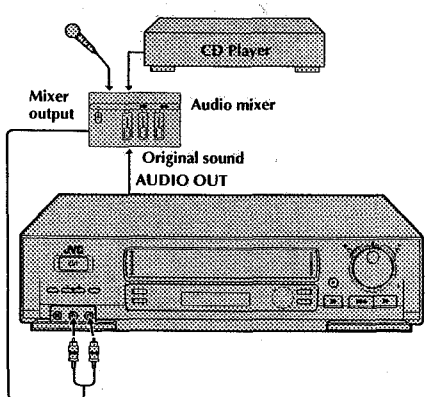
NOTE:

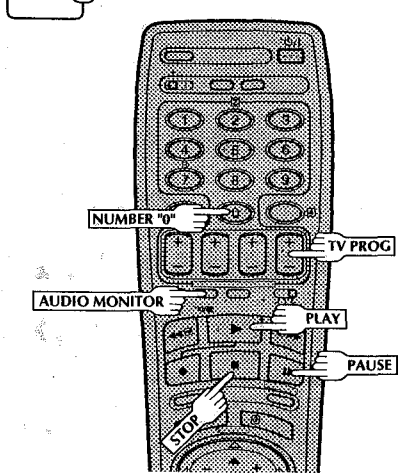
All necessary cables can be obtained from your dealer.



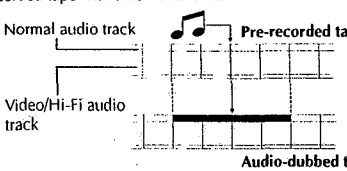
Audio Dubbing







Audio dubbing replaces the normal audio sound of a previously recorded tape with a new soundtrack.



1 MAKE CONNECTIONS

Connect an audio component to the AUDIO IN L + R connectors on the recorder's front panel. *When connecting monaural equipment, use only the recorder's AUDIO IN L connector.

2 SET INPUT MODE

Press **NUMBER** key "0" and/or **TV PROG** so that "F-AU" appears in place of a preset position number.

3 LOCATE START POINT

Press **PLAY** to start playback of the tape in your recorder, and press **PAUSE** when you find the point where you want to start dubbing.

4 ENGAGE AUDIO DUBBING

Press **A. DUB**.

- Your recorder enters the Audio Dubbing Pause mode. (" ○ " blinks, " ▷ " and " ▯▯ " light up on the front display panel.)
- To perform audio dubbbing with audio mixing, press **AUDIO MONITOR** to select "L + R" at this point. *Audio dubbing with audio mixing is not possible if you're using a monaural audio component, or if you don't have an audio mixer.

5 START DUBBING

Engage the audio component's Play mode, then press **PLAY** to start the tape in your recorder. Audio dubbing begins at this point.

- " ○ " blinks and " ▷ " is displayed on the front display panel.
- To stop dubbing temporarily, press **PAUSE**. Press **PLAY** to resume dubbing.

6 END AUDIO DUBBING

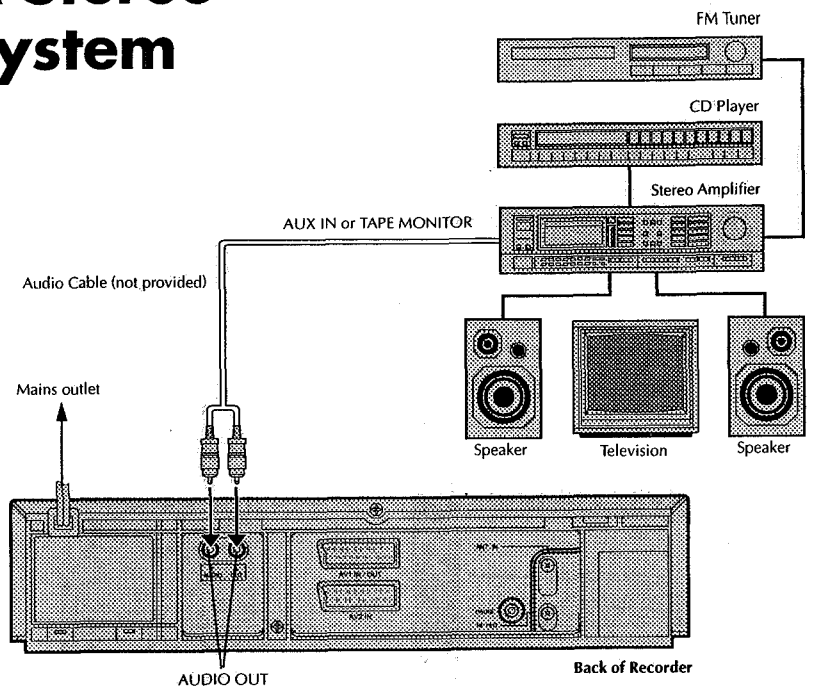
Press **STOP** to stop the tape in your recorder, and engage the audio component's Stop mode.

NOTES:

- *When monitoring the sound during Audio Dubbing, the normal soundtrack is automatically selected. If you wish to hear the mixed sound (Hi-Fi + Normal soundtracks), press **AUDIO MONITOR** to select "L+R+NORM" (☞ pg. 16).*
- *Audio dubbing stops automatically when the counter reaches "0:00:00", and the recorder enters the Play mode. Check the counter reading before dubbing.*
- *Audio dubbing is also possible using the rear panel AV1 IN/OUT or AV2 IN connectors. When using these connectors, make sure to select the correct input mode in step 2.*
- *Audio dubbing cannot be performed on a cassette that has had its record safety tab removed.*
- *When playing back an audio-dubbed tape, press **AUDIO MONITOR** to select the soundtrack you wish to hear (☞ pg. 16).*

Connection To A Stereo System

These instructions enable you to connect your video recorder to your Hi-Fi stereo system (if you have one) and listen to the soundtrack through the stereo.



1 MAKE CONNECTIONS

Connect the AUDIO OUT L and R connectors on your video recorder to the AUX IN or TAPE MONITOR terminals on your stereo system's receiver or amplifier.

NOTES:

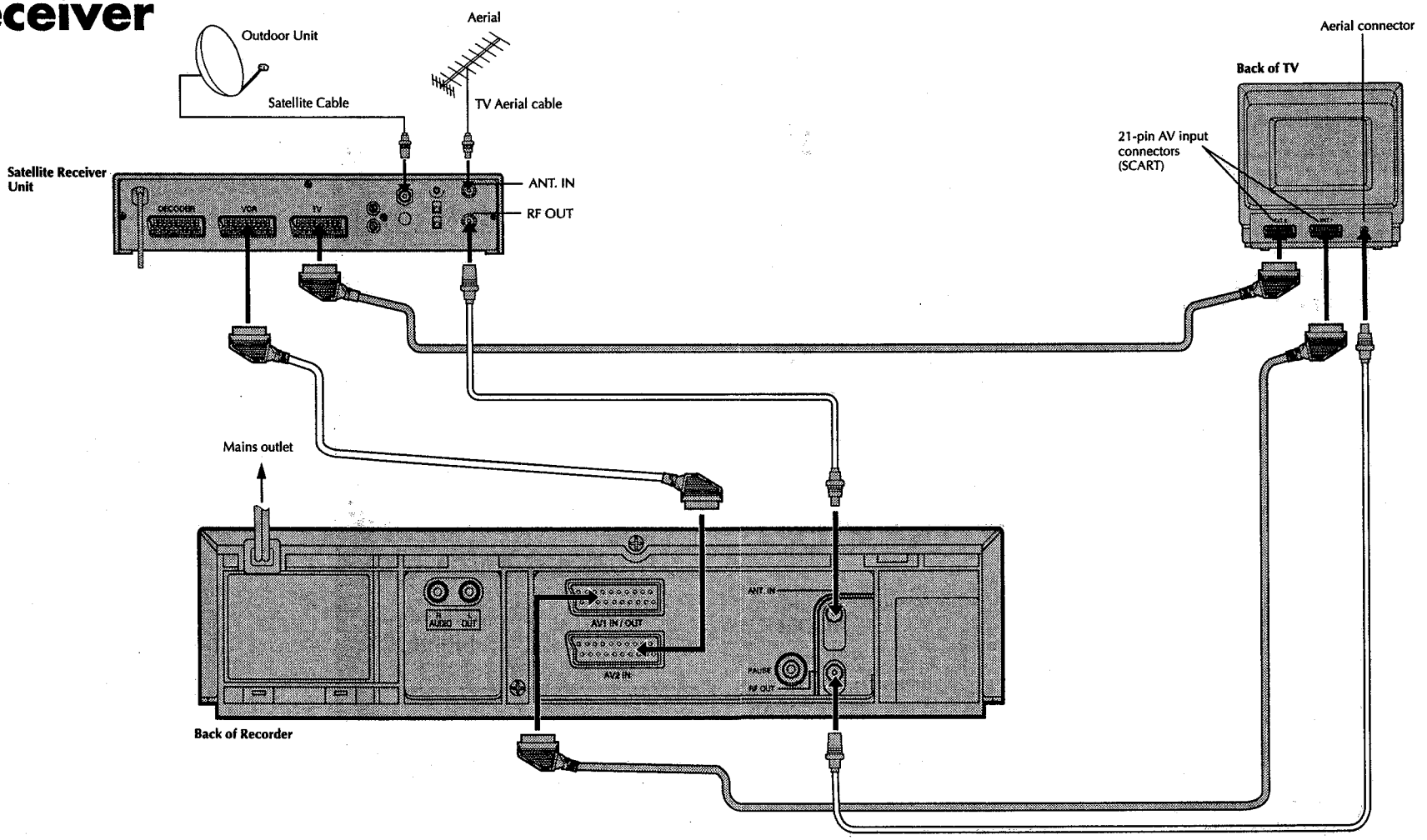
- *When connecting your recorder's audio output connectors to a stereo amplifier, make sure you connect L and R correctly.*
- *If NICAM TV broadcasts are receivable in your area, this recorder can record them independently of the TV set and play them back through the connected stereo system.*
- *When listening to sound through the connected stereo system, turn the TV's volume down completely.*

CAUTIONS:

- This recorder has a dynamic range of more than 80 dB with regards to its Hi-Fi audio capability. It is recommended that you check the maximum level if you are going to listen to the Hi-Fi audio signals through a stereo amplifier. A sudden surge in the input level to the speakers may damage them.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set as this can adversely affect the video playback picture.

Connection To A Satellite Receiver

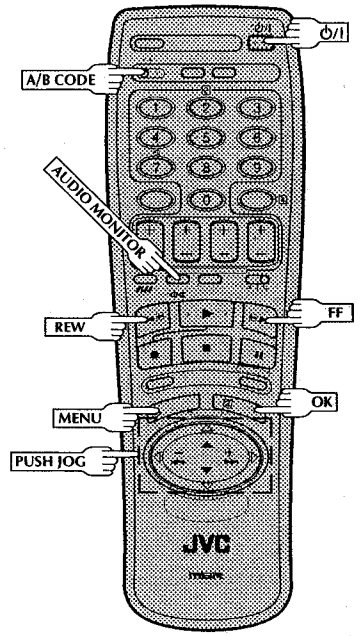
The AV2 IN connector on the rear panel of your recorder allows simple connection to a satellite receiver.



NOTES:

- *When connecting your recorder to a TV equipped with 21-pin AV input connectors (SCART), follow the illustration above using the cables shown in gray.*
- *For details, check your satellite receiver's instruction manual.*

Turn on the TV and select the VIDEO channel (or AV mode).



NOTES:

- *When you use this recorder as the player for editing, be sure to set "O.S.D." to "OFF." before starting.*
- *During playback, the operation mode indicators may be disturbed depending on the type of tape being used.*

On-Screen Dispiay

You can choose whether or not to have various operational indicators appear on screen, by setting this function ON or OFF.

1 TURN ON THE RECORDER

Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

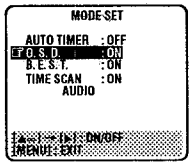
Press **MENU** twice.

3 ACCESS MODE SET SCREEN

Move the highlight bar (pointer) to "MODE SET" by pressing **PUSH JOG** △▽, then press **OK**.

4 ENABLE/DISABLE ON-SCREEN DISPLAY

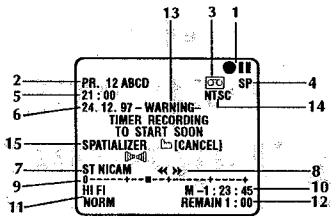
The default setting is "ON", so if you want on-screen displays, leave the setting as it is and go to step **5**. If you don't want the displays to appear, press **PUSH JOG** △▽ to move the highlight bar (pointer) to "O.S.D." and press **PUSH JOG** ▷ to set "O.S.D." to "OFF".



5 RETURN TO NORMAL

Press **MENU**.

The superimposed indication on the TV screen tells you what the recorder is doing.

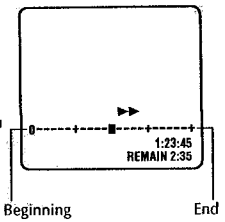


1– Operation mode indicators
2– Preset position number and station name/Aux. indicator (AUX1, AUX2 or F-AUX)
3– Cassette loaded mark
4– Tape speed SP/LP/EP (EP is for NTSC playback only)
5– Clock display
6– Current day/month/year
7– NICAM display (☞ pg. 37)
8– Tape direction
9– Tape position indicator (☞ pg. 37)
10– Counter display (including Counter Memory indicator)
11– Audio mode display (☞ pg. 16)
12– Tape remaining time indicator (☞ pg. 21)
13– Timer warning display (☞ pg. 28)
14– NTSC display (☞ pg. 17)
15– Spatializer® indicator (☞ pg. 16)

Tape Position Indicator

The tape position indicator appears on screen when, from the Stop mode, you press **FF**, **REW** or perform an Index Search. The position of "■" in relation to "0" (beginning) or "+" (end) shows you where you are on the tape.

"O.S.D." (☞ pg. 36) must be set to "ON", or the indicator will not appear.



NOTE:

Depending on the type of tape used, there may be times when the indication is not correct.

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to the remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1 REMOVE POWER SUPPLY

Unplug the mains power cord from the mains outlet.

2 SET A/B CODE SWITCH

Set to B.

3 RE-SUPPLY POWER

Plug the mains power cord back into the mains outlet.

4 TURN THE RECORDER ON

Press ⏻/I on the remote control. The recorder will now only respond to B code signals.

NOTE:

Some TV sets may malfunction in response to the B mode. If this happens, switch back to the A mode.

Receiving NICAM Stereo And Bilingual Programmes

Your recorder is equipped with a Digital stereo sound decoder (NICAM), making reception of stereo and bilingual broadcasts possible.

When the recorder is tuned to a different station, the type of broadcast being received will be displayed on the TV screen for a few seconds.

Type of Broadcast Being Received	On-screen Display
Regular Monaural	(none)
NICAM Stereo	ST NICAM
NICAM Bilingual	BIL NICAM
NICAM Monaural	NICAM

NOTE:

"O.S.D." must be set to "ON" or the on-screen displays will not appear (☞ pg. 36).

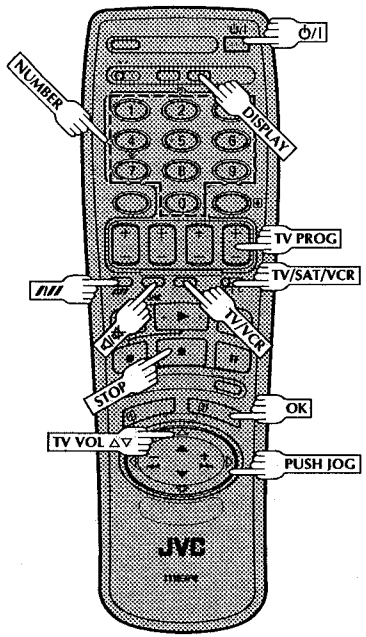
- To listen to a stereo programme, press **AUDIO MONITOR** until "L" and "R" appear on the front display panel.
- To listen to a bilingual programme, press **AUDIO MONITOR** until either "L" or "R" appears on the front display panel (as required).
- To listen to the Standard (regular monaural) audio while receiving a NICAM broadcast, press **AUDIO MONITOR** until "NORM" appears on the front display panel.

To Record NICAM Stereo And Bilingual Programmes

The NICAM audio programme will be recorded on the Hi-Fi audio track, and the Standard audio programme on the normal audio track.

NOTES:

- *If the quality of stereo sound being received is poor, the broadcast will be received in monaural with better quality.*
- *Before playing back a programme recorded in stereo, or a bilingual programme, refer to "Soundtrack Selection" (☞ pg. 16).*



TV Multi-brand Remote Control

Your remote control can operate the basic functions of your TV set. In addition to JVC TVs, other manufacturer's TVs can also be controlled by setting the appropriate switch on the remote control.

Before you start . . .
- Turn on the TV using its remote control.
- Set the remote control's **TV/SAT/VCR** switch to TV.

1 SET TV BRAND CODE

Refer to the chart below. While holding down ⏻/I, enter your TV's brand code using the **NUMBER** keys, then press **STOP**.

- JVC has four codes. If the TV does not function with one code, try entering another.
- You don't have to repeat this step until you replace your remote control's batteries.

2 TRY OPERATING TV

Press ⏻/I on the remote to turn the TV off. If it goes off, try other operations.

- The ⏻/I button, **TV/VCR** button, **TV PROG +/–** button, **TV VOL** △▽ button and 🔇/✖ **(Mute)** button on the remote can all be used to operate the TV.
- To return the remote to video recorder control, set its **TV/SAT/VCR** switch to VCR.

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many other models, it may not work with your TV, or in some instances, may have limited function capability.

TV BRAND NAME	CODE
JVC	01, 02, 03, 04
BRANDT	05
NORDMENDE	05
SABA	05
TELEAVIA	05
TELEFUNKEN	05
THOMSON	05
FERGUSON	06
PHILIPS	07
BLAUPUNKT	08
GRUNDIG	08
SONY	09
PANASONIC	10
GRAETZ	11
ITT	11
LUXOR	11
SALORA	11
SELECO	11
MIVAR	12
HITACHI	13
TOSHIBA	14
MITSUBISHI	15
FINLUX	16
NOKIA	17
SHARP	18
FUNAI	20
NEC	22

Control Your TV Using Additional Buttons

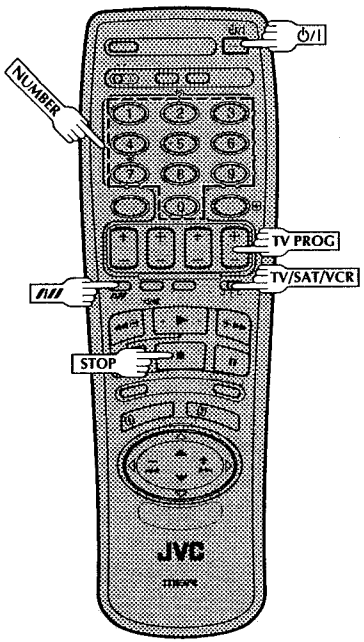
The **NUMBER** keys on the remote can also be used to select the TV's channel by setting the remote control to the TV mode.

1 Set the **TV/SAT/VCR** switch to TV.
2 Use the **NUMBER** keys, and the **I/II (Digit Entry)** button, the **PUSH JOG** button, the **DISPLAY** button or the **OK** button to select the TV's channel.

- With televisions under Code 01, 02, 03, 04, 06, 07, 09, 10, 13, 14 or 22, the **I/II** button corresponds to the 1-digit/2-digit entry switching button (often labelled –/– –) of your TV's remote control.
- With televisions under Code 01, 11 or 12, the **PUSH JOG** ◁ button corresponds to the 10 + button, and the **PUSH JOG** ▷ button corresponds to the 20 + button of your TV's remote control.
- With televisions using Code 12, the **DISPLAY** button corresponds to the 30 + button.
- With televisions using Code 09, the **OK** button corresponds to the ENTER button of your TV's remote control.

NOTES:

The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.



Satellite Receiver Multi-Brand Remote Control

Your remote control can operate the basic functions of your satellite receiver set. In addition to JVC satellite receivers, other manufacturer's satellite receivers can also be controlled by setting the appropriate switch on the remote control.

Before you start . . .
- Turn on the satellite receiver using its remote control.
- Set the remote control's **TV/SAT/VCR** switch to SAT

1 SET SATELLITE RECEIVER BRAND CODE

Refer to the chart below. While holding down ⏻/I, enter your satellite receiver's brand code using the **NUMBER** keys, then press **STOP**.

- Some satellite receiver brands have more than one code. If the satellite receiver does not function with one code, try entering another.
- You don't have to repeat this step until you replace your remote control's batteries.

2 TRY OPERATING SATELLITE RECEIVER

Press ⏻/I on the remote to turn the satellite receiver off. If it goes off, try other operations.

- The ⏻/I button, **TV PROG +/–** button, **NUMBER** buttons on the remote can all be used to operate the satellite receiver.
- The **NUMBER** buttons will not work with JVC satellite receivers using code 13.
- With satellite receivers using Code 16, the **I/II** button corresponds to the ENTER button of your satellite receiver's remote control.
- To return the remote to video recorder control, set its **TV/SAT/VCR** switch to VCR.

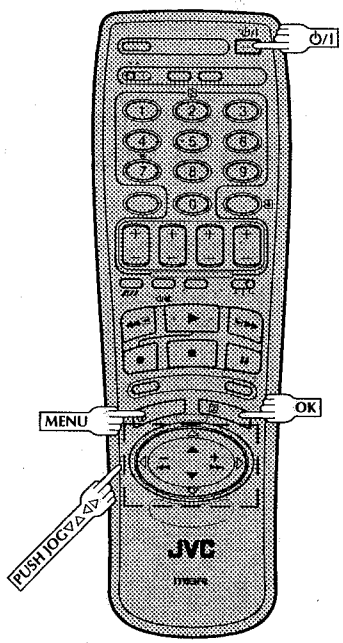
IMPORTANT

Although the provided remote control unit is compatible with JVC satellite receivers, as well as many other models, it may not work with your satellite receiver, or in some instances, may have limited function capability.

SATELLITE RECEIVER BRAND	CODE
JVC	13, 14
AMSTRAD	01, 02, 03, 04
SIEMENS	05
GRUNDIG	05, 06
KATHREIN	05, 11, 12
PACE	06, 08
PHILIPS	07
ITT	09
NOKIA	09
SKYMASTER	10
RFT	10
MASPRO	11
BT	13
PANASONIC	15
JERROLD	16

Auto Channel Set

Turn on the TV and select the VIDEO channel (or AV mode).



IMPORTANT
Perform the following steps only if auto channel set has not been set correctly by Auto Set Up function (☞ pg. 8) or if you have moved to a different area or if a new station starts broadcasting in your area.

Your recorder needs to memorise all necessary stations in preset positions in order to record TV programmes. Auto Channel Set automatically assigns all receivable stations in your area.

1 TURN ON THE RECORDER

Press ⏻/I.

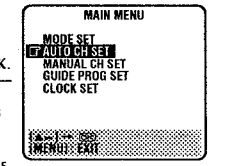
2 ACCESS MAIN MENU SCREEN

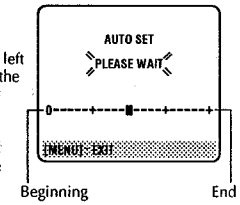
Press **MENU** twice.

3 PERFORM AUTO CHANNEL SET

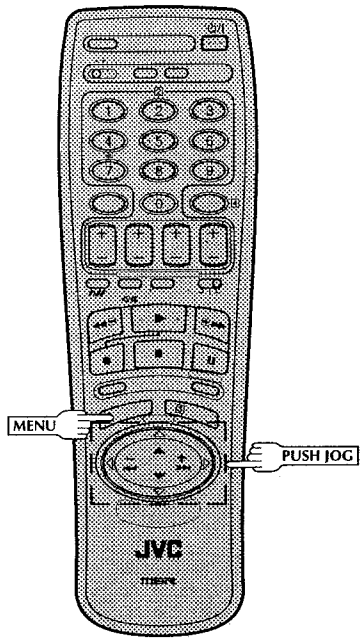
Move the highlight bar (pointer) to "AUTO CH SET" by pressing **PUSH JOG** △▽, then press **OK**.

- The Auto Set screen appears, and remains on screen while the recorder searches for receivable stations. As Auto Channel Set progresses, the "■" mark on the screen moves from left to right. Wait until the screen as shown in step 4 appears.
- Auto Channel Set usually takes about 4 – 12 minutes; the duration differs by the area.





Beginning End



4 VIEW CONFIRMATION SCREEN

The stations your recorder located appear on a Confirmation screen — preset positions (PR), channels (CH) and station names (ID – ☞ pg. 46). To view the next page of the listing, press **PUSH JOG** △▽◁▷. The blueback screen and the program currently being broadcast by the blinking station appear alternately for 5 seconds each.

PR	CH	ID	PR	CH	ID
01	26	BBC1	08		----
02	33	BBC2	09		----
03	23	ITV	10		----
04	30	CH4	11		----
05	37	CH5	12		----
06		----	13		----
07		----	14		----

[▲▼◀▶]: CONT
[CANCEL]: DELETE
[MENU]: EXIT

- The Guide Program numbers will also be set automatically during Auto channel Set.

5 RETURN TO NORMAL SCREEN

Press **MENU**.

- Using the Confirmation screen, you can skip or add preset positions, enter station names and perform other operations. Refer to pages 42 – 45 for the procedures.
- Depending on reception conditions, the stations may not be stored in order, and the station names may not be stored correctly.

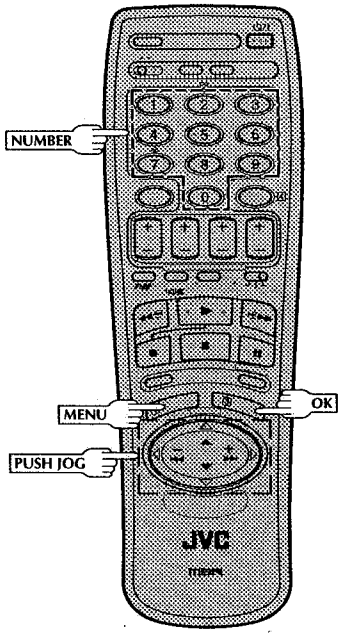
IMPORTANT

- Depending on the reception conditions, the station names may not be stored correctly, and auto Guide Program Number Set may not work properly. If the Guide Program numbers are not set properly, Video Plus+ timer recording (☞ pg. 24) will not work correctly; be sure to check if the Guide Program numbers have been set correctly (☞ pg.10, "Video Plus+ Setup").
- Since your video recorder memorizes all detected stations even if the reception condition is poor, some of those stored stations may produce a noisy picture. To delete those stations, ☞ "Delete A Channel" on page 43.

NOTE:

Fine tuning is performed automatically during Auto Channel Set. If you want to perform it manually, refer to page 45.

Manual Channel Set



ATTENTION
After you have stored channels manually, be sure to perform Guide Program Number Set (☞ pg. 10) in order to get proper results from Video Plus+ timer recording.

Storing Channels Manually

Store channels that were not stored during Auto Set Up (☞ pg. 8) or Auto Channel Set (☞ pg. 40).

1 ACCESS MAIN MENU

Press **MENU** twice.

2 ACCESS CONFIRMATION SCREEN

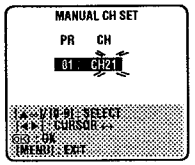
Press **PUSH JOG**△▽ to move the highlight bar (pointer) to "MANUAL CH SET", then press **OK**. The Confirmation screen appears.

3 SELECT POSITION

Press **PUSH JOG**△▽◁▷ until an open position in which you want to store a channel begins blinking, then press **OK**. The Manual Ch. Set screen appears.

4 INPUT CHANNEL

The number "21" appears blinking to the right of "CH". Press the **NUMBER** keys to input the channel number you want to store.



- For fine tuning adjustment, press **PUSH JOG**▷ until the channel number begins blinking, then press **PUSH JOG**△▽. While tuning, "F+" or "F–" appears.

5 ENTER NEW CHANNEL INFORMATION

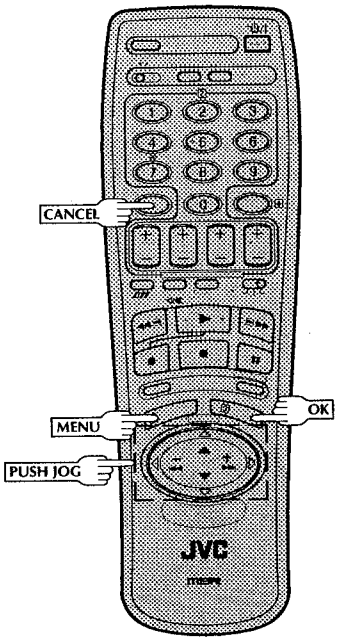
Press **OK** and the Confirmation screen appears.

- Repeat steps **3** through **5** as necessary.

6 CLOSE CONFIRMATION SCREEN

Press **MENU**.

- To input the station name, see page 44.
- To change positions, see "Change Station Preset Position" (☞ pg. 43).



ATTENTION
After you have deleted channels or changed preset positions, be sure to perform Guide Program Number Set (☞ pg. 10) in order to proper results from Video Plus+ timer recording.

Perform steps **1** and **2** of "Storing Channels Manually" on page 42 to access the Confirmation screen before continuing.

Delete A Channel

1 SELECT ITEM

Press **PUSH JOG**△▽◁▷ until the item you want to delete begins blinking.

2 DELETE CHANNEL

Press **CANCEL**.

- The item directly beneath the cancelled one moves up one line.
- Repeat steps **1** and **2** as necessary.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Change Station Preset Position

1 SELECT ITEM

Press **PUSH JOG**△▽◁▷ until the item you want to move begins blinking. Then press **OK** and the station name (ID) and its channel (CH) number begin blinking.

2 SELECT NEW POSITION

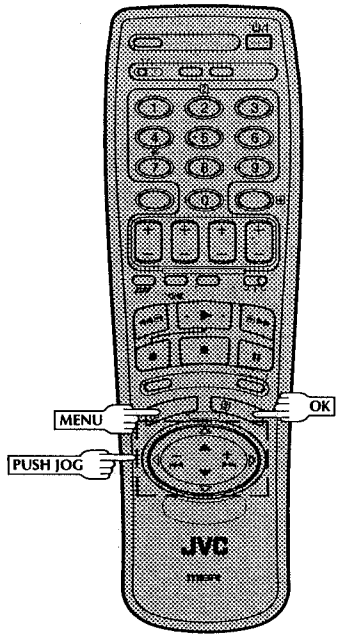
Press **PUSH JOG**△▽◁▷ to move the station to the new preset position, then press **OK**.

Example: If you moved the station in position 3 to position 7, the stations originally in positions 4–7 each move up one space.

- Repeat steps **1** and **2** as necessary.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.



Perform steps **1** and **2** of "Storing Channels Manually" on page 42 to access the Confirmation screen before continuing.

Set Stations (A)

1 SELECT ITEM

Press **PUSH JOG**△▽◁▷ until the item you want begins blinking. Then press **OK** twice and the station's name (ID) begins blinking.

2 SELECT NEW STATION

Press **PUSH JOG**△▽ until the new station's name (ID) you want to store begins blinking.
Registered station names (☞ pg. 46) appear as you press **PUSH JOG**△▽.

3 SWITCH STATIONS

Press **OK**.

- Repeat steps **1** through **3** as necessary.

4 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Set Stations (B)

NOTE:

*First perform step **1** of the above procedure.*

2 SELECT STATION NAME CHARACTER

Press **PUSH JOG** ▷ and the first letter of the station name begins blinking.

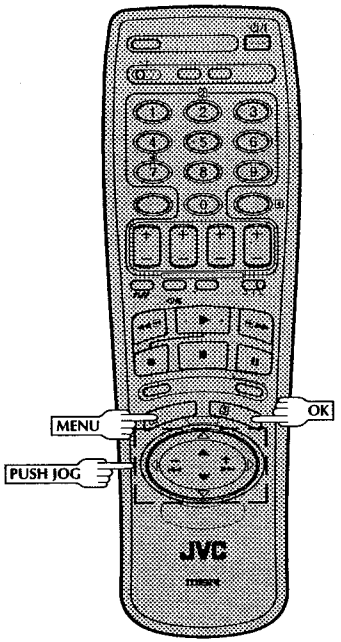
3 ENTER NEW CHARACTER

Press **PUSH JOG**△▽ to cycle through the characters (A–Z, 0–9, –, ✱, +, _(space)) and stop when the desired one is indicated, then press **PUSH JOG**▷ to enter. Enter the remaining characters the same way (maximum of 4).
After entering all characters, press **OK**.

- Repeat steps **1** through **3** as necessary.
- If you make a mistake, press **PUSH JOG** ◁ until the incorrect character begins blinking. Then enter the correct character by pressing **PUSH JOG**△▽.

4 CLOSE CONFIRMATION SCREEN

Press **MENU**.



Perform steps **1** and **2** of "Storing Channels Manually" on page 42 to access the Confirmation screen before continuing.

Fine-Tuning Channels Already Stored

1 SELECT CHANNEL TO FINE-TUNE

Press **PUSH JOG**△▽◁▷ until the channel you want to tune begins blinking.

2 ACCESS MANUAL CH. SET SCREEN

Press **OK** three times. The Manual Ch. Set screen appears.

3 PERFORM TUNING

Press **PUSH JOG**△▽ until the picture is its clearest. Then press **OK**.

- The Confirmation screen appears.
- Repeat steps **1** through **3** as necessary.

4 CLOSE CONFIRMATION SCREEN

Press **MENU**.

TV Station And ID List

STATION NAME	ID*
Anglia TV	ANGL
ARD	ARD
ARTE	ARTE
BBC Group	BBC
BBC1	BBC1
BBC2	BBC2
Berlin 1	BLN1
Berlin 2	BLN2
Border TV	BORD
Bayern1	BR1
Bayern3	BR3
BRT1	BRT1
BRT2	BRT2
Children Ch	CHLD
Canal +	CH+
CNN	CNN
Channel TV	CHNL
Central TV	CNTR
Channel 4	CH 4
Channel 5	CH 5
DRS	DRS
DR TV	DRTV
DSF	DSF
Euronews	EURN
Euronews	EURO
Eurosports	EURS
France1	FR1
France2	FR2
France3	FR3
Granada TV	GRNA
Grampian TV	GRMP
Hessen1	HR1
Hessen3	HR3
HRT	HRT
HTV	HTV
ITV Network	ITV
Kabelkanal	KABL
London	LNDN
MDR	MDR
MTV	MTV
Nord3	N3
NDR1	NDR1
NDR3	NDR3
NED1	NED1
NED2	NED2
NED3	NED3
Network 2	NET2
NRK	NRK
N-TV	N-TV
Offener Kanal	OKAN
ORF1	ORF1
ORF2	ORF2
ORF3	ORF3
OWL 3	OWL3
Premiere	PRMI
PR07	PR07
RAI1	RAI1
RAI2	RAI2
RAI3	RAI3
RB1	RB1
RB3	RB3
Rikisutvarpid-S	RKPS
RTBF 1	RTB1
RTBF 2	RTB2
RTE 1	RTE1
RTL	RTL
RTL 2	RTL2
RTP	RTP

STATION NAME	ID*
SAT	
SAT 1	SAT1
Scottish TV	SCOT
SC4	SC4
SDR	SDR
SDR1	SDR1
SFB1	SFB1
SFB3	SFB3
SKY	
Sky One	SKY1
Sky Net	SKYN
Sport	SPRT
SR 1	SR1
Super RTL	SRTL
STV Test	STVT
STV 1	STV1
STV 2	STV2
Suedwest3	SW3
SWF 1	SWF1
Schweiz4	SWZ4
TYNE TEES	TEES
Text	TEXT
TF1	TF1
TNT int	TNT
TRT int	TRT
TSI	TSI
TSR	TSR
TSW	TSW
TVE	TVE
TV Polonia	TVPA
TVP 1	TVP1
TVP 2	TVP2
TVS	TVS
TV2	TV2
TV5	TV5
Tele Zurich	TZUR
Ulster TV	ULST
Veronica	VERN
VIVA	VIVA
VIVA2	VIV2
VOX	VOX
VTM	VTM
VT4	VT4
West1	WDR1
West3	WDR3
YLE 1	YLE1
YLE 2	YLE2
Yorkshire TV	YORK
ZDF	ZDF
Zurich 1	ZUR1
3SAT	3SAT

* The "ID" abbreviation is what is shown on-screen in lieu of the station name. The "ID" abbreviation is listed in the Confirmation screen and is displayed on the TV screen when the recorder is tuned to a different station.

TV Station Channel Number Guide

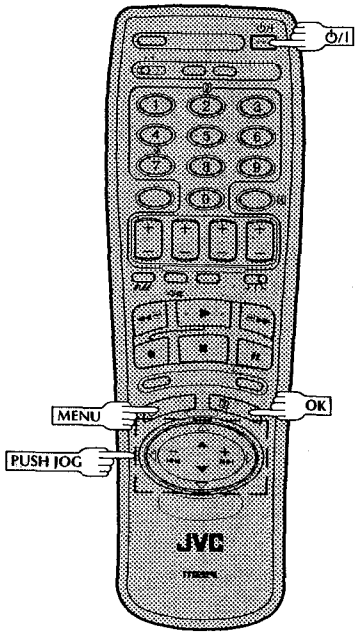
Only the main stations are listed. There are in addition many relay stations, and full lists are available from BBC and ITC.

	BBC1	BBC2	ITV	CH4
London & South-East				
Bluebell Hill	40	46	43	65
Crystal Palace	26	33	23	30
Dover	50	56	66	53
Heathfield	49	52	64	67
Oxford	57	63	60	53
South-West				
Beacon Hill	57	63	60	53
Caradon Hill	22	28	25	32
Huntshaw Cross	55	62	59	65
Redruth	51	44	41	47
Stockland Hill	33	26	23	29
Channel Islands				
Fremont Point	51	44	41	47
South				
Hannington	39	45	42	66
Midhurst	61	55	58	68
Rowridge	31	24	27	21
West				
Mendip	58	64	61	54
East				
Sandy Heath	31	27	24	21
Sudbury	51	44	41	47
Tacolneston	62	55	59	65
Midlands				
Ridge Hill	22	28	25	32
Sutton Coldfield	46	40	43	50
The Wrekin	26	33	23	29
Waltham	58	64	61	54
North				
Belmont	22	28	25	32
Emley Moor	44	51	47	41

	BBC1	BBC2	ITV	CH4
North-West				
Caldbeck	30	34	28	32
Winter Hill	55	62	59	65
North-East				
Bilsdale West Moor	33	26	29	23
Chatton	39	45	49	42
Pontop Pike	58	64	61	54
Scotland				
Angus	57	63	60	53
Black Hill	40	46	43	50
Sandale	22	—	—	—
Caldbeck	—	34	28	32
Creigkelly	31	27	24	21
Darvel	33	26	23	29
Durris	22	28	25	32
Eitshal	33	26	23	29
Keelylang Hill	40	46	43	50
Knock More	33	26	23	29
Rosemarkie	39	45	49	42
Rumster Forest	31	27	24	21
Selkirk	55	62	59	65
Wales				
Blaenplwyf	31	27	24	21
Carmel	57	63	60	53
Llanddona	57	63	60	53
Moel-y-Parc	52	45	49	42
Presely	46	40	43	50
Wenvoe	44	51	41	47
Northern Ireland				
Brougher Mountain	22	28	25	32
Divis	31	27	24	21
Limavady	55	62	59	65

Clock Set

Turn on the TV and select the VIDEO channel (or AV mode).



IMPORTANT
Perform the following steps only if Auto Clock Set has not been performed correctly by Auto Set Up (☞ pg. 8) or Auto Channel Set (☞ pg. 40) or if the recorder's memory backup has expired.

If you performed Auto Set Up or Auto Channel Set without ever having set the clock previously, the recorder's built-in clock is also set automatically. The Auto and Manual clock setting procedures are necessary when . . .
- a power outage of more than 3 minutes occurs.
- the tuner has been set manually.
- the user desires to set the clock slightly ahead of the actual time.
- the clock was not set even after Auto Set Up or Auto Channel Set was performed.

Whether you perform Auto or Manual clock setting, you can use the convenient Just Clock function.

Just Clock
The Just Clock function provides accurate time keeping through automatic adjustments at regular intervals, by reading data from a PDC signal.
The Just Clock option appears in the Clock Set and Auto Clock Set screens, and can be set "ON" or "OFF" (the default setting is "ON"). Press **OK** until the Just Clock setting begins blinking, then press **PUSH JOG△▽** to change the setting.

IMPORTANT: If you turn off Just Clock off, the accuracy of your recorder's built-in clock may be reduced, which could adversely effect timer recording.

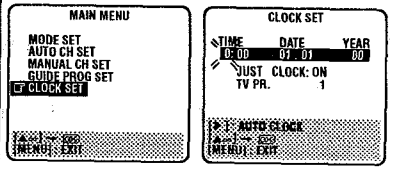
Both Auto and Manual clock setting procedures begin from step **4**.

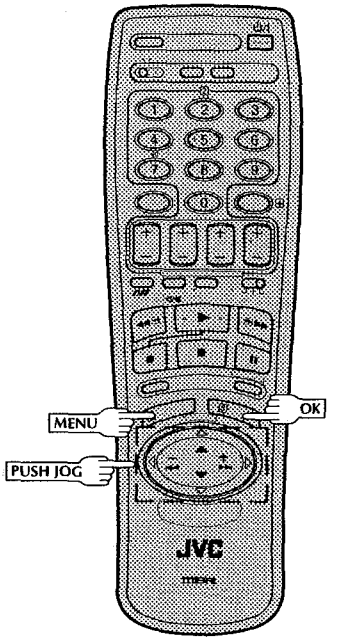
Preparation

1 TURN THE RECORDER ON
Press ⏻/I.

2 ACCESS MAIN MENU SCREEN
Press **MENU** twice.

3 ACCESS CLOCK SET SCREEN
Move the highlight bar (pointer) to "CLOCK SET" by pressing **PUSH JOG △▽**, then press **OK**. The Clock Set screen appears.

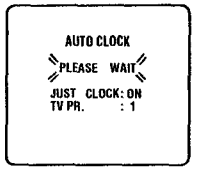




NOTES:
- *Just Clock (when set to "ON") adjusts the recorder's built-in clock every hour, except for 23:00, 0:00, 1:00 and 2:00.*
- *Just Clock is not effective when . . .*
  - *the recorder's power is on (unless the recorder is tuned to the same preset selected in the Clock Set screen).*
  - *the recorder is in the Timer mode.*
  - *a difference of more than 3 minutes exists between the built-in clock's time and the actual time.*
- *If Just Clock is set to "ON", the recorder's clock is automatically adjusted at the start/end of Summer Time.*
- *Auto clock setting and Just Clock may not function properly depending on the reception condition.*
- *During Manual clock setting, if the day and month data are invalid (such as 31st April), the month digits are cleared automatically and the day digits begin blinking. Input the correct data.*
- *If, in step 4 of the Manual clock setting procedure, the year digits are automatically cleared and the day digits begin blinking, it is possible that you have input 29th February for a non-leap year. Input the correct data.*

Auto Clock Set

4 SET CLOCK AUTOMATICALLY
At the Clock Set screen, press **PUSH JOG▷**. The Auto Clock Set screen appears and clock setting begins.



- If "TV PR." isn't set to the preset position on which Auto Clock Set data is received, "ERROR" appears, and then the screen from step **3** reappears. To set "TV PR.", press **OK** to place the cursor next to it, then cycle through the numbers by pressing **PUSH JOG△▽** until the number representing the position in which the station transmitting clock setting data (BBC1, BBC2, etc.) is stored appears.

5 RETURN TO NORMAL SCREEN
Once clock setting is completed, press **MENU** to return to the normal screen.

Manual Clock Set

4 SET DATE AND TIME
Press **PUSH JOG△▽** to set the hour, then press **OK**. The "minutes" display begins blinking. Repeat the procedure to set the minutes, day, month and year.

5 SET JUST CLOCK
The default setting is "ON". Set as desired by pressing **PUSH JOG△▽**, then press **OK**.

- If you set to "OFF", you can disregard the next step as you won't be able to receive regular clock adjustments.

6 SET CLOCK DATA SOURCE PRESET
The recorder is preset to receive clock setting and adjustment data from preset position 1. Press **PUSH JOG△▽** to set the preset position to the number representing the station transmitting clock setting data (BBC1, BBC2, etc.), then press **OK**.

7 START CLOCK OPERATION
Press **MENU**.

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your video recorder off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. No power is applied to the recorder.	• The mains power cord is disconnected.	Connect the mains power cord.
2. The clock is functioning properly, but the recorder cannot be powered.	• "⏲" is displayed on the display panel with Auto Timer set to "OFF".	Press the **TIMER** button to turn the "⏲" indicator off.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape does not run during recording.	• "▯▯" is displayed on the display panel.	Press **PLAY** to turn the "▯▯" indicator off.
2. The tape stops during rewind or fast-forward.	• "M" is displayed on the display panel.	Press **C.MEMORY** to deactivate the Counter Memory function and turn the "M" indicator off.
3. The tape will not rewind or fast-forward.	• The tape is already fully rewound or fast-forwarded.	Check the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The playback picture does not appear while the tape is running.	• If you're using the RF OUT connection . . . . . . the TV receiver's channel selector is not set to the VIDEO channel. . . . the recorder's VIDEO channel has not been correctly set. • If you're using the AV connection, the TV receiver is not set to the AV mode.	If you are using the RF OUT connection . . . . . . set the TV receiver to the VIDEO channel. (☞ pg. 6) . . . Perform "Video Channel Set" (☞ pg. 6) If you are using the AV connection, set the TV to its AV mode.
2. Noise appears during normal playback.	• The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 14)
3. Noise appears during slow-motion playback.	• The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 14)
4. Noise appears during still playback.		Press **TV PROG** + or – a few times to remove the noise bars from the screen.
5. Breaks are noticeable in Hi-Fi soundtrack.	• Automatic tracking is engaged.	Engage and adjust tracking manually. (☞ pg. 14)
6. The playback picture is blurred or interrupted while TV broadcasts are clear.	• The video heads may be dirty.	Consult your JVC dealer.

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording cannot be started.	• There is no cassette loaded, or the cassette loaded has had its Record Safety tab removed.	Insert a cassette, or using adhesive tape, reseal the slot where the tab was removed.
2. TV broadcasts cannot be recorded.	• "AU" has been selected as the input mode.	Set to the desired preset.
3. Tape-to-tape editing is not possible.	• The source (another video recorder, camcorder) has not been properly connected. • All necessary power switches have not been turned on. • The input mode is not correct.	Confirm that the source is properly connected. Confirm that all units' power switches are turned on. Set the input mode to "AU".
4. Camcorder recording is not possible.	• The camcorder has not been properly connected. • The input mode is not correct.	Confirm that the camcorder is properly connected. Set the input mode to "AU".

TIMER RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	• The clock and/or the timer have been set incorrectly. • The timer is not engaged.	Re-perform the clock and/or timer settings. Press TIMER and confirm that "⏲" is displayed on the display panel.
2. On-screen timer programming is not possible.	• Timer recording is in progress.	Timer programming can't be performed while a timer recording is in progress. Wait until it finishes.
3. "⏲" and "📼" on the display panel won't stop blinking.	• The timer is engaged but there's no cassette loaded.	Load a cassette with the Record Safety tab intact, or cover the hole using adhesive tape.
4. The cassette is automatically ejected, and "⏲" and "📼" on the display panel won't stop blinking.	• The loaded cassette has had its Record Safety tab removed.	Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the Record Safety tab intact.
5. "⏲" blinks for 10 seconds and the Timer mode is disengaged.	• **TIMER** has been pressed when there are no programs in memory, or the timer record information has been programmed incorrectly.	Check the programmed data and re-program as necessary, then press **TIMER** again.
6. The cassette is automatically ejected, the power shuts off and "⏲" and "📼" won't stop blinking.	• The end of the tape was reached during timer recording.	The programme may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire programme.
7. Video Plus+ does not timer-record properly.	• The recorder's preset positions have been set incorrectly.	Refer to "Guide Program Number Set" and re-perform the procedure (☞ pg. 10).

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Whistling or howling is heard from the TV during camcorder recording.	• The camcorder's microphone is too close to the TV. • The TV's volume is too high.	Position the camcorder so its microphone is away from the TV. Turn the TV's volume down.
2. When scanning channels, some of them are skipped over.	• Those channels have been designated to be skipped.	If you need the skipped channels, restore them (☞ pg. 42).
3. The preset cannot be changed.	• Recording is in progress.	Press **PAUSE** to pause the recording, change presets, then press **PLAY** to resume recording.
4. The remote control won't operate my TV or satellite receiver.	• The **TV/SAT/VCR** switch is in the wrong position.	Set the switch to the correct position.
5. Channel settings that were made manually seem to have changed or disappeared.	• After the manual settings were made, Auto Channel Set was performed.	Perform manual setting again.
6. No channels are stored in the recorder's memory.	• The TV aerial cable was not connected to the recorder when Auto Set Up was performed.	Connect the TV aerial cable to the recorder properly and turn off the recorder power once, then turn the recorder power back on again. The recorder will try Auto Set Up again (☞ pg. 8).

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.

Q. Can the video recorder indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.

Q. When returning from multi-speed search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.

Q. Other than preventing further recording, what effect does removing the Record Safety tab have?
A. It disables marking of index codes.

Q. Sometimes, during Index Search, the video recorder can't find the programme I want to see. Why not?
A. There may be index codes too close together.

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the beginning of the continuation of recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.

Q. Can the video recorder indefinitely remain in the Record-Pause mode?
A. No. The video recorder shuts off automatically after 5 minutes to protect the heads.

Q. What happens if the tape runs out during recording?
A. The video recorder automatically rewinds it to the beginning.

TIMER RECORDING

Q. "○" and "⊖" remain lit on the display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.

Q. Can I program the timer while I'm watching a tape or a TV broadcast?
A. You won't see the picture as it is replaced by the on-screen menu, but the audio from the program or tape you're viewing can be heard.

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the recorder off and unplug the mains power cord. Then plug it in again and turn the recorder on. Take out the cassette. After checking the cassette, operate the unit as usual.

GENERAL

Power requirement	: AC 220 – 240 V∿, 50/60 Hz
Power consumption	: 24 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 x 94 x 340 mm
Weight	: 4.3 kg
Format	: VHS PAL standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP)	: 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: DA4 (Double Azimuth) helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output	: 21-pin scart connector x 2 (IN/OUT x 1, IN x 1) RCA connector x 1 (IN x 1, OUT x 1)

TUNER/TIMER

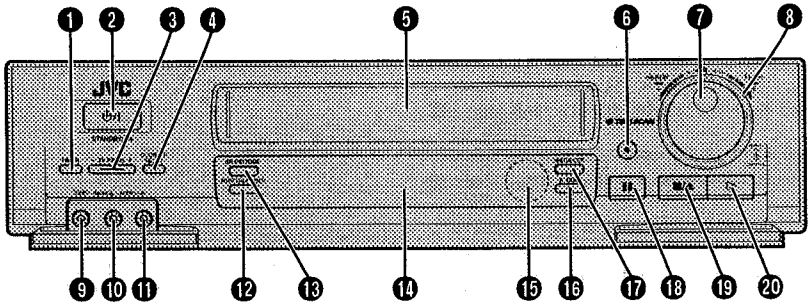
TV channel storage capacity	: 99 positions (+AUX position "AU")
Tuning system	: Frequency synthesized tuner
Channel coverage	: UHF channels 21 – 69 (470 – 862 MHz)
Aerial output	: UHF channels 22 – 69 (Adjustable)
Memory backup time	: Approx. 3 min.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "AA" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

FRONT VIEW



* Remove the cap to use the front panel connectors.

❶ **TIMER Button** engages timer standby mode. ☞ pg. 25, 27

❷ **STANDBY/ON ⏻/I Button** turns recorder on/off (loading a cassette also turns power on). ☞ pg. 8

❸ **TV PROG +/– Buttons** select a preset position. ☞ pg. 20

❹ **COUNTER RESET Button** resets counter to 0:00:00. ☞ pg. 21

❺ **Cassette Loading Slot** is where cassette is inserted; door closes, "cassette loaded" indicator lights up on front display panel.

❻ **RECORD Button** starts regular recording (press once), Instant Timer Recording (press twice); sets duration of ITR. ☞ pg. 20, 21

❼ **TV PROG Dial** scans to desired preset position during Stop mode. ☞ pg. 20
JOG Dial plays back frame by frame during Still or Play mode. ☞ pg. 13

❽ **TIME SCAN SHUTTLE Ring** rewinds or fast-forwards tape during Stop mode ☞ pg. 12; performs forward and reverse slow-motion and search (TimeScan) during Still or Play mode. ☞ pg. 13, 18

❾ **VIDEO Input Connector** enables easy connection of video output from another recorder or camcorder for editing. ☞ pg. 31

❿ **AUDIO Input Connector [L]** enables easy connection of audio output (mono) from another recorder, camcorder or other source for editing. ☞ pg. 31

⓫ **AUDIO Input Connector [R]** enables easy connection of audio output (Hi-Fi) from another recorder, camcorder or other source for editing. ☞ pg. 31

⓬ **AUTO SP/LP TIMER Button** engages Auto SP/LP Timer for automatic switching from SP to LP mode during timer recording. ☞ pg. 29

⓭ **3R PICTURE Button** enables/disables 3R Picture. ☞ pg. 15

⓮ **Display Panel** provides clear view of various displays and indicators. ☞ pg. 55

⓯ **Infrared Beam Receiving Window** is where remote control should be aimed when in use.

⓰ **A.DUB Button** engages Audio Dubbing mode. ☞ pg. 32

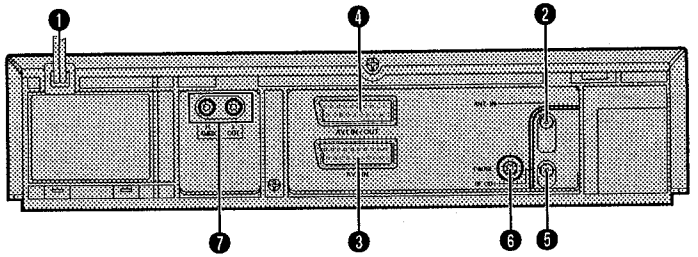
⓱ **SPATIALIZER Button** enables/disables Spatializer®. ☞ pg. 16

⓲ **PAUSE Button** stops tape temporarily during recording ☞ pg. 20; stops tape temporarily during playback; plays back frame by frame with each additional press. ☞ pg. 13

⓳ **STOP/EJECT Button** stops tape; ejects tape during Stop mode. ☞ pg. 12

⓴ **PLAY Button** plays back tape ☞ pg. 12; cancels Pause, Still, Slow, Search modes. ☞ pg. 13

REAR VIEW



❶ **Mains Power Cord** supplies power to recorder. ☞ pg. 4

❷ **ANT. IN Connector** enables connection of aerial. ☞ pg. 4

❸ **AV2 IN Connector** enables connection of second recorder or satellite receiver; input recordable when "AU-2" selected. ☞ pg. 30, 34

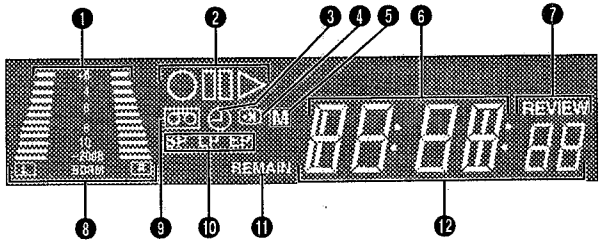
❹ **AV1 IN/OUT Connector** enables AV connection to TV or second recorder; input recordable when "AU-1" selected. ☞ pg. 4, 30

❺ **RF OUT Connector** enables connection to aerial terminal of TV receiver. ☞ pg. 4

❻ **Remote PAUSE Connector** enables connection to second recorder equipped with R.A. Edit connector, or to JVC camcorder equipped with Master Edit Control, for easy editing. ☞ pg. 31

❼ **AUDIO OUT (L/R) Connectors** enable connection of audio cassette recorder, TV or second video recorder for dubbing. ☞ pg. 33

DISPLAY PANEL



❶ **B.E.S.T. Picture System Display** lights from bottom to top while B.E.S.T. is active. ☞ pg. 22
Audio Level Indicator displays audio input and output levels.

❷ **Symbolic Mode Indicators**

PLAY: FF/REW VARIABLE SHUTTLE SEARCH:	▷	STILL: SLOW:	▯▯▷
		RECORD:	○
		RECORD PAUSE:	○▯▯
AUDIO DUBBING:			▷
AUDIO DUBBING PAUSE:			▯▯▷

❸ **"Timer" Indicator** lights when the **TIMER** button has been pressed to engage Timer mode. ☞ pg. 25, 27

❹ **PDC Indicator** lights when PDC has been engaged for timer recording. ☞ pg. 24, 26

❺ **Counter Memory Indicator** lights when the video recorder is in the Counter Memory mode. ☞ pg. 15

❻ **Channel Display** shows preset position where the station currently being received is stored.
(Ex.) Preset position 1 will be displayed as "CH 1".
Mode shows external input mode selected.
Clock Display shows current time. ☞ pg. 9, 48

❼ **Instant REVIEW Indicator** blinks after timer-recording and shows how many programmes have been timer-recorded. ☞ pg. 15

❽ **Audio Mode Indicator** displays audio output mode currently selected. ☞ pg. 16

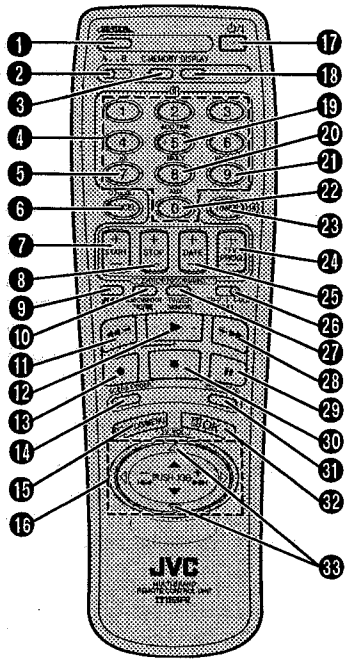
❾ **"Cassette Loaded" Mark** lights once a cassette is inserted; remains lit until cassette ejected or power turned off.

❿ **Tape Speed Indicators** display mode of recording; light during Record or Play mode. ☞ pg. 20
* EP is for NTSC Playback only.

⓫ **Tape Remaining Time Indicator** displays time remaining on tape when certain buttons are pressed. ☞ pg. 21

⓬ **Counter** shows time elapsed since playback or recording began.
REMAIN displays time remaining from current tape position to end of tape.
Counter, Preset Position*, Clock and REMAIN Display appear alternately when **DISPLAY** is pressed.
* Preset position is not displayed during playback.

REMOTE CONTROL



Buttons with a small dot on the left side of the name can also be used to operate your TV with the **TV/SAT/VCR** switch set to "TV". ☞ pg. 38

❶ **REVIEW Button** "reviews" timer-recorded programme. ☞ pg. 15

❷ **A/B Code Switch** enables setting of recorder to respond to A- or B-code command signals. ☞ pg. 37

❸ **C. MEMORY Button** engages Counter Memory mode. ☞ pg. 15

❹ **NUMBER Keys** are used in preset position selection ☞ pg. 20, Video Plus+ timer programming ☞ pg. 24.

❺ **(PDC) Button** enables/disables PDC recording. ☞ pg. 24, 27

❻ **CANCEL Button** erases previously entered data in on-screen selection menus. ☞ pg. 11
C. RESET Button resets counter to 0:00:00. ☞ pg. 21

❼ **START +/– Button** accesses Regular Program screen; inputs programme Start Time. ☞ pg. 26

❽ **STOP +/– Button** inputs programme Stop Time. ☞ pg. 26

❾ **SP/LP Button** selects tape speed. ☞ pg. 20
Auto Tracking Button enables/disables auto tracking mode during playback ☞ pg. 14
Digit Entry Button is used in controlling connected TV. ☞ pg. 38

❿ **AUDIO MONITOR Button** changes output sound mode. ☞ pg. 16
(TV Mute) Button mutes sound of connected TV. ☞ pg. 38

⓫ **Rewind [REW] Button** rewinds the tape ☞ pg. 12; initiates high-speed reverse search. ☞ pg. 13

⓬ **Play Button** — same as button on recorder. ☞ pg. 12

⓭ **Record Button** — same as button on recorder. ☞ pg. 20

⓮ **SCENE FINDER Button** initiates cycle of 5-second forward (or reverse) search and 10-minute fast-forward (or reverse) on counter. ☞ pg. 17

⓯ **PROG/MENU Button** accesses Program screen (press once) or Main Menu screen (press twice). ☞ pg. 10, 24

⓰ **PUSH JOG △▽◁▷ Button** is used for selection in on-screen menus. ☞ pg. 10
PUSH JOG ◁▷ Button initiates functions such as Index Search ☞ pg. 15, variable-speed search, frame by frame playback. ☞ pg. 13, 18 sets TV channels. ☞ pg. 38

⓱ **STANDBY/ON ⏻/I Button** — same as button on recorder. ☞ pg. 8

⓲ **DISPLAY Button** switches display between clock time, tape remaining time, counter readings, preset position*. ☞ pg. 21
** Preset position is not displayed during playback.*

⓳ **ADD TIME Button** adds time to end of Video Plus+ timer recording (5 minutes each time button is pressed.) ☞ pg. 25

⓴ **DAILY Button** enables timer recording of daily serials. ☞ pg. 25, 27

㉑ **WEEKLY Button** enables timer recording of weekly serials. ☞ pg. 25, 27

㉒ **AUX Button** selects recorder's auxiliary input mode. ☞ pg. 30

㉓ **TIMER Button** — same as button on recorder. ☞ pg. 25, 27

㉔ **TV PROG +/– Button** — same as button on recorder. ☞ pg. 20

㉕ **DATE +/– Button** inputs date of program for timer recording. ☞ pg. 26

㉖ **TV/SAT/VCR Switch** enables remote control of VCR or connected TV or satellite receiver. ☞ pg. 38, 39

㉗ **TV/VCR Button** switches connected TV's mode between TV and AV. ☞ pg. 38

㉘ **Fast Forward Button** fast-forwards tape ☞ pg. 12; initiates high-speed forward search. ☞ pg. 13

㉙ **Pause Button** — same as button on recorder. ☞ pg. 13

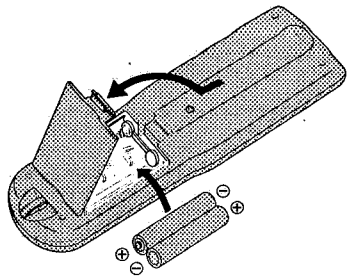
㉚ **Stop Button** — same as button on recorder. ☞ pg. 12

㉛ **PROG CHECK Button** accesses Program screens/displays to check the program that you have programmed (next program's information screen/display appears each time button is pressed). ☞ pg. 28

㉜ **OK Button** enters selections made in on-screen menus. ☞ pg. 10

㉝ **TV VOL △▽ Button** controls volume of connected TV. ☞ pg. 38

Installing Batteries
1. Open the battery compartment cover.
2. Insert 2 "AA"-size batteries (provided) in the correct directions.
3. Replace the cover.



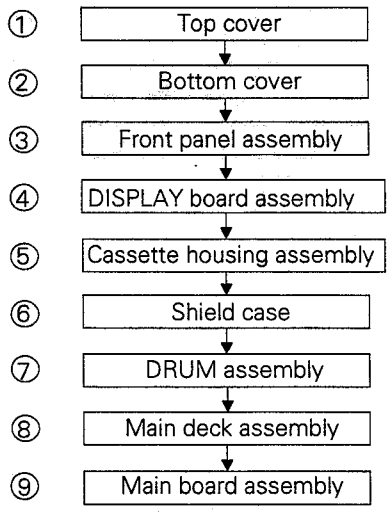
How To Use
The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets and satellite receivers of JVC and other brands. ☞ pg. 38, 39.
- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

NOTE:
If for some reason the remote control doesn't work properly, remove its batteries, wait a short time and then try again.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists shows the disassembly steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend,route and dress the flat cables as they were originally.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	5(S1)	
②	BOTTOM COVER	D2	(S2), 7(L1)	
③	FRONT PANEL ASSEMBLY	D3	7(L2),*JOG/SHUTTLE *CN854	<NOTE 1>
④	DISPLAY BOARD ASSEMBLY	D4	9(L3),*CN1201, *CN1202	<NOTE 2>
⑤	CASSETTE HOUSING ASSEMBLY	D5	2(S3),2(S4)	<NOTE 3>
⑥	SHIELD CASE	D6	2(S5),*CN1	

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig.No. showing procedure or part location
(4) Indentification of part to be removed,unhooked,unlocked, released,unpluged,unclamped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, * = Unhook,unlock, release,unplug or unsolder.
(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	5(S1)	
②	BOTTOM COVER	D2	(S2), 7(L1)	
③	FRONT PANEL ASSEMBLY	D3	7(L2),*JOG/SHUTTLE *CN854	<NOTE1>
④	DISPLAY BOARD ASSEMBLY	D4	9(L3),*CN1201 *CN1202	<NOTE2>
⑤	CASSETTE HOUSING ASSEMBLY	D5	2(S3) ,2(S4)	<NOTE3>
⑥	SHIELD CASE	D6	2(S5), *CN1	
⑦	DRUM ASSEMBLY	D7	3(S6),WR1,3(L4) *CN851, INERTIA PLATE, PIN	<NOTE4>
⑧	MAIN DECK ASSEMBLY	D8	2(S7),WR2, WR3,2(L5),*CN703	<NOTE5>
⑨	MAIN BOARD ASSEMBLY	D9	3(S8)	

<NOTE1>
When reattaching the front panel assembly, make sure that the door opener ⓐ of the cassette housing assembly is lowered in position prior to the reinstallation.

<NOTE2>
When plugging the connector in, check that the flat wire is inserted properly and fully.

<NOTE3>
When reattaching the cassette housing assembly, pay careful attention to the switch lever not to make it touch the REC switch knob of the REC SAFETY board assembly from the upside.
(If the REC switch knob of the REC SAFETY board assembly is damaged, cassette loading is impossible.)

<NOTE4>
When plugging the connector in, check that the flat wire is inserted properly and fully.

<NOTE5>
- When removing the Main deck assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Main deck assembly.
- When reattaching the Main deck assembly to the Main board assembly, make sure to set the spacers into the retaining slots respectively.

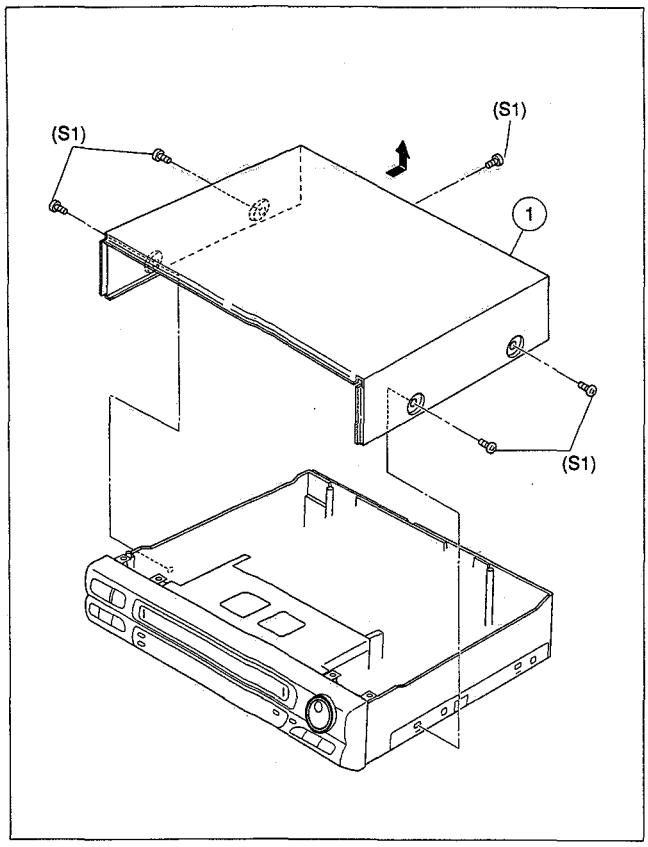


Fig. D1

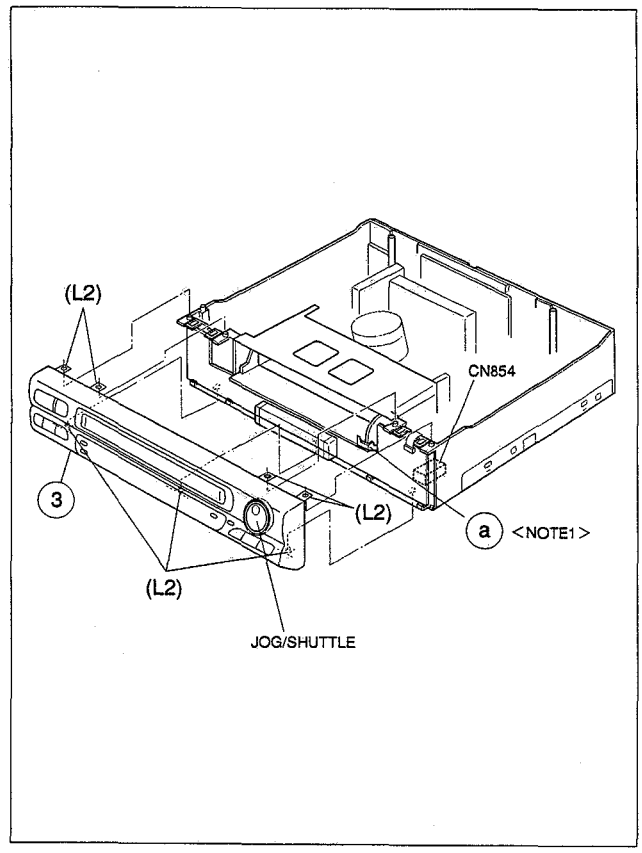


Fig. D3

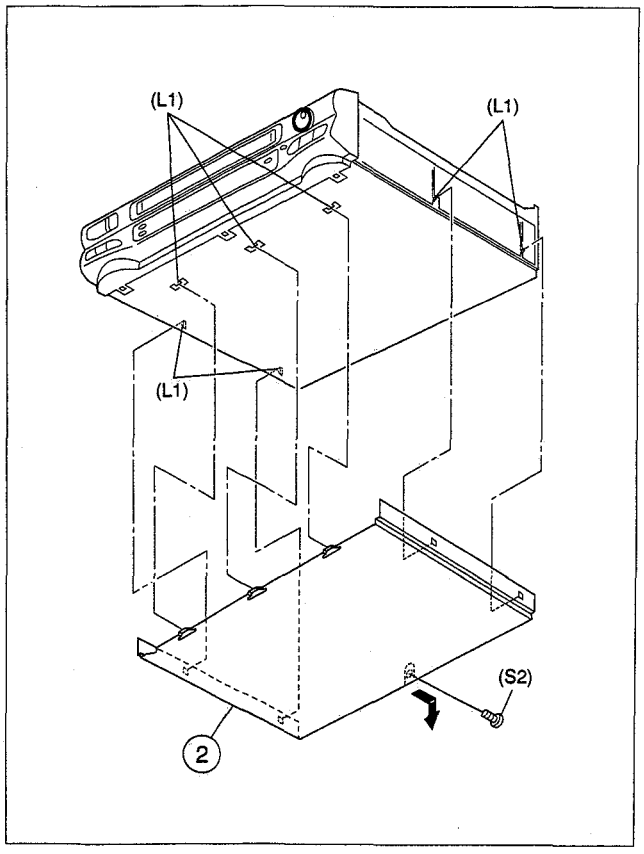


Fig. D2

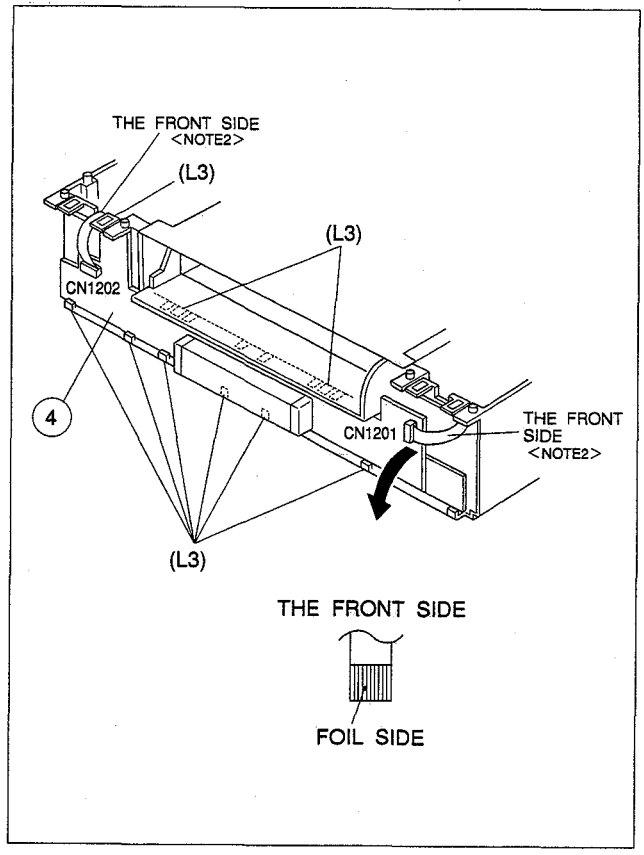


Fig. D4

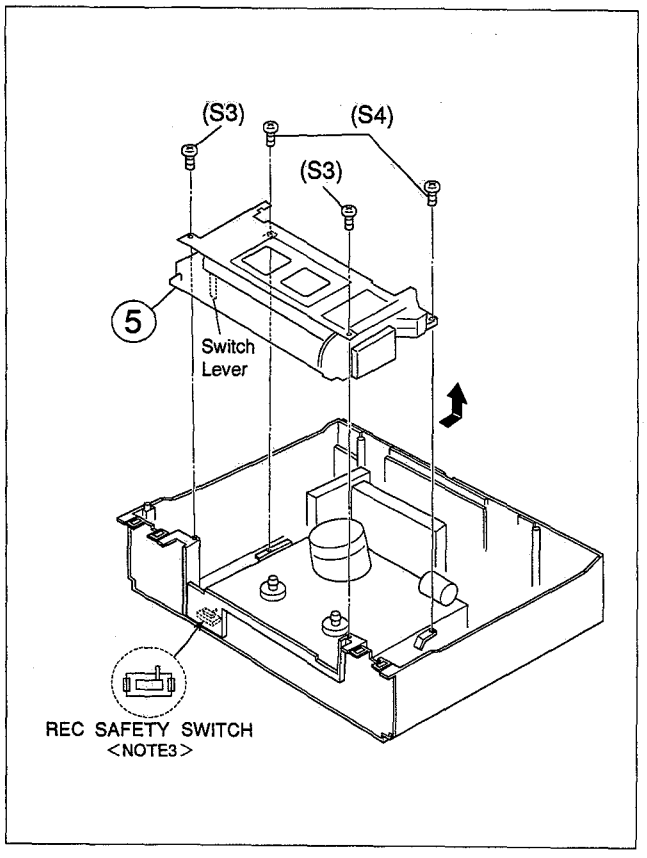


Fig. D5

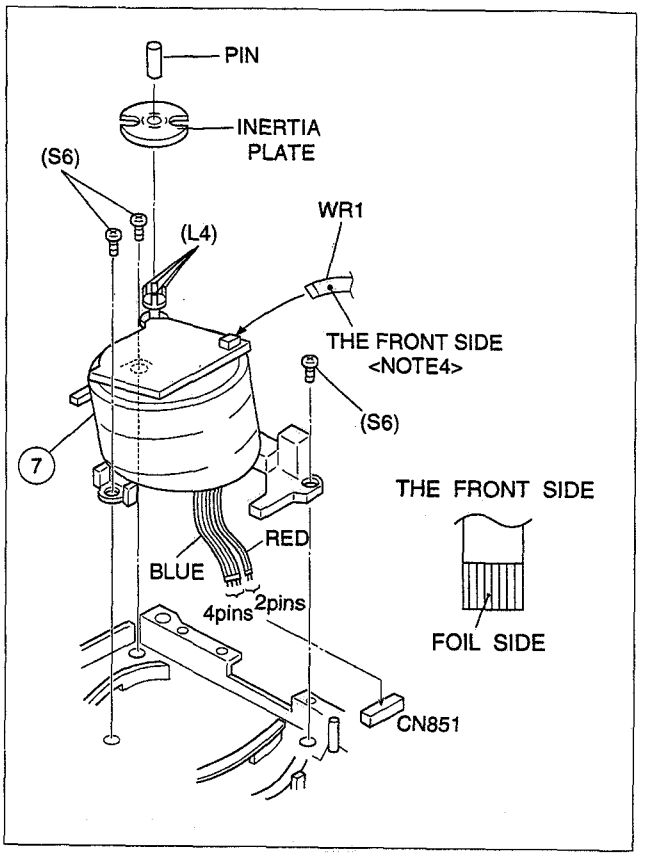


Fig. D7

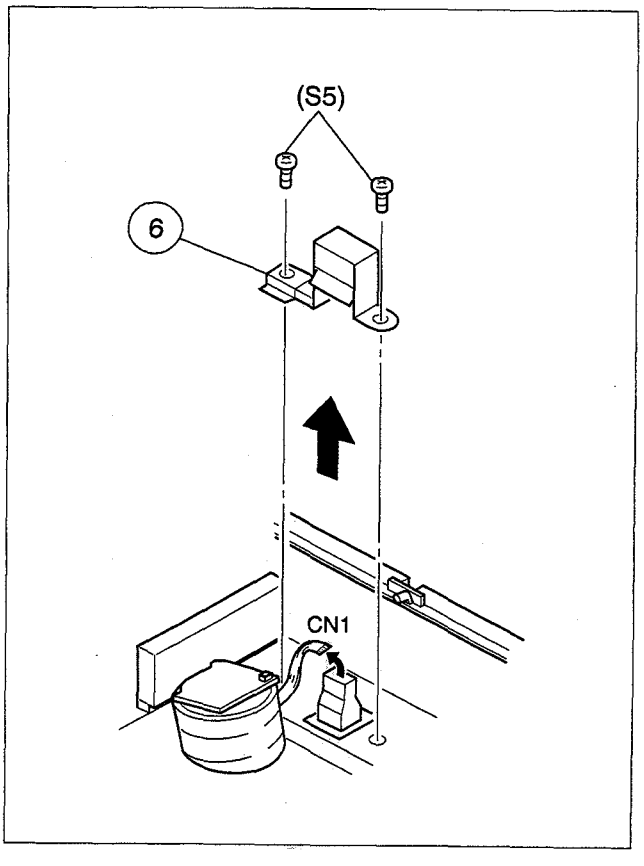


Fig. D6

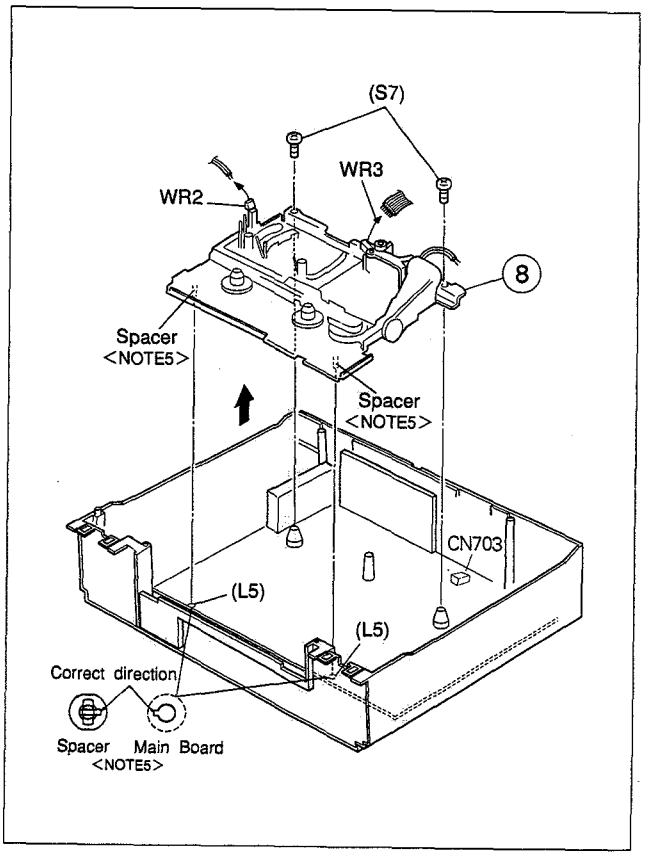


Fig. D8

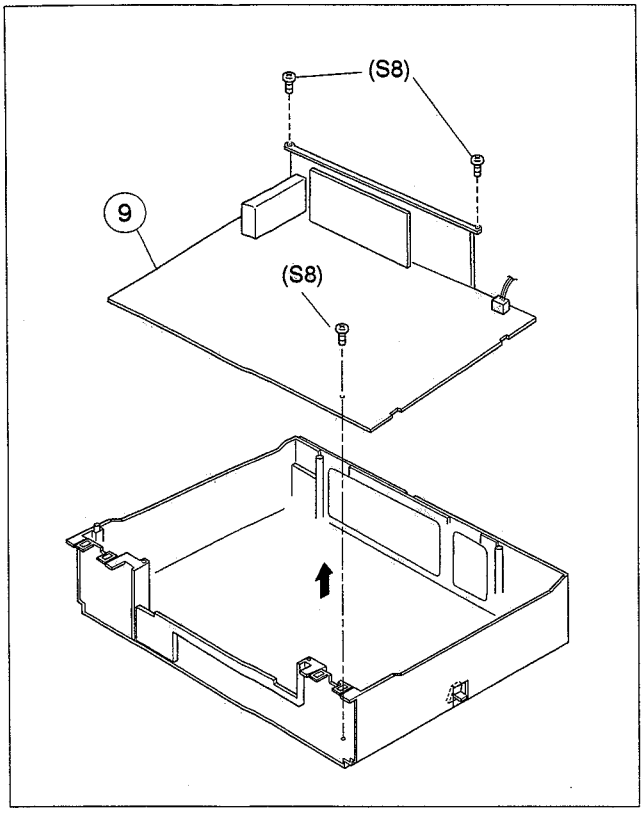


Fig. D9

Fig. D9

1.4 CASSETTE HOUSING INSTALLATION

NOTE: *Observe the mechanical phase and position (see figure) when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.*

1. Check that the hole of the control cam are aligned to the deck hole. If necessary, turn the loading motor belt by hand to adjust the position.

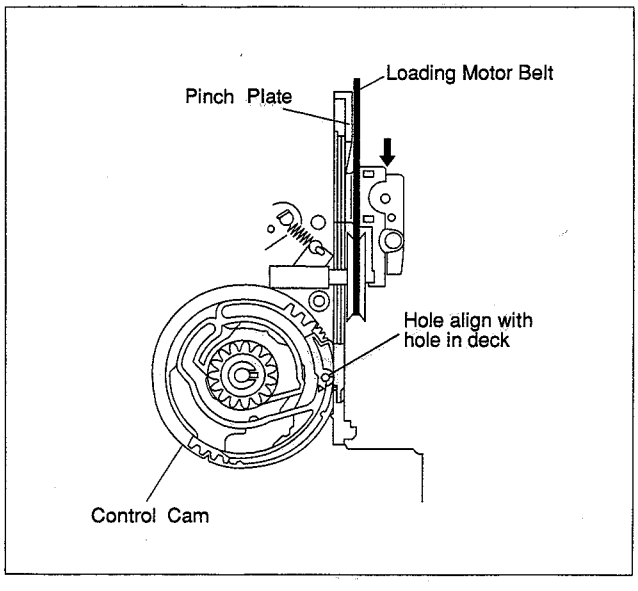


Fig. 1-4-1

1.5 SERVICE POSITION

1.5.1 How to take out the Mechanism and Main board assemblies.

(1) Remove the Top cover, Front panel assembly, CN1201 and CN1202 of DISPLAY board assembly.
(2) Take out 5 screws Ⓐ, 2 screws Ⓑ and 1 screw Ⓒ as shown in Fig.1-5-1.

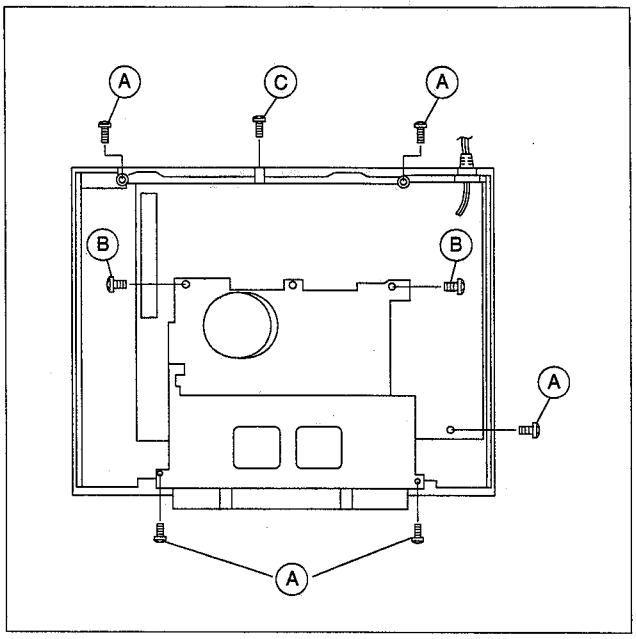


Fig. 1-5-1

(3) Remove the Mechanism assembly (including Cassette housing) and Main board assembly out of the chassis as shown in Fig. 1-5-2.

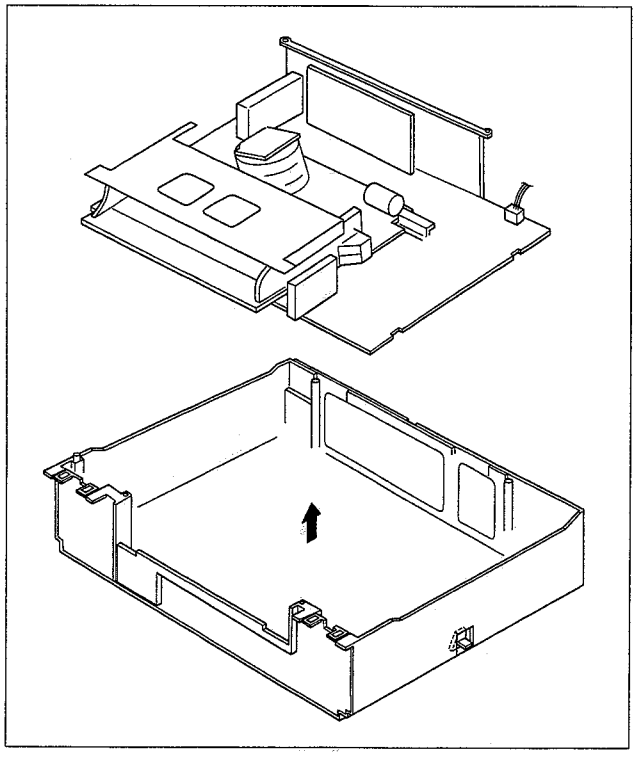


Fig. 1-5-2

(5) Turn over the Mechanism assembly and Main board assembly then connect CN1201of the DISPLAY board assembly.
(6) Carry out checks & repairs as necessary as shown in Fig.1-5-3.

Note: *When input the AUDIO/VIDEO signal from connector, connect CN1202 of the DISPLAY board assembly.*

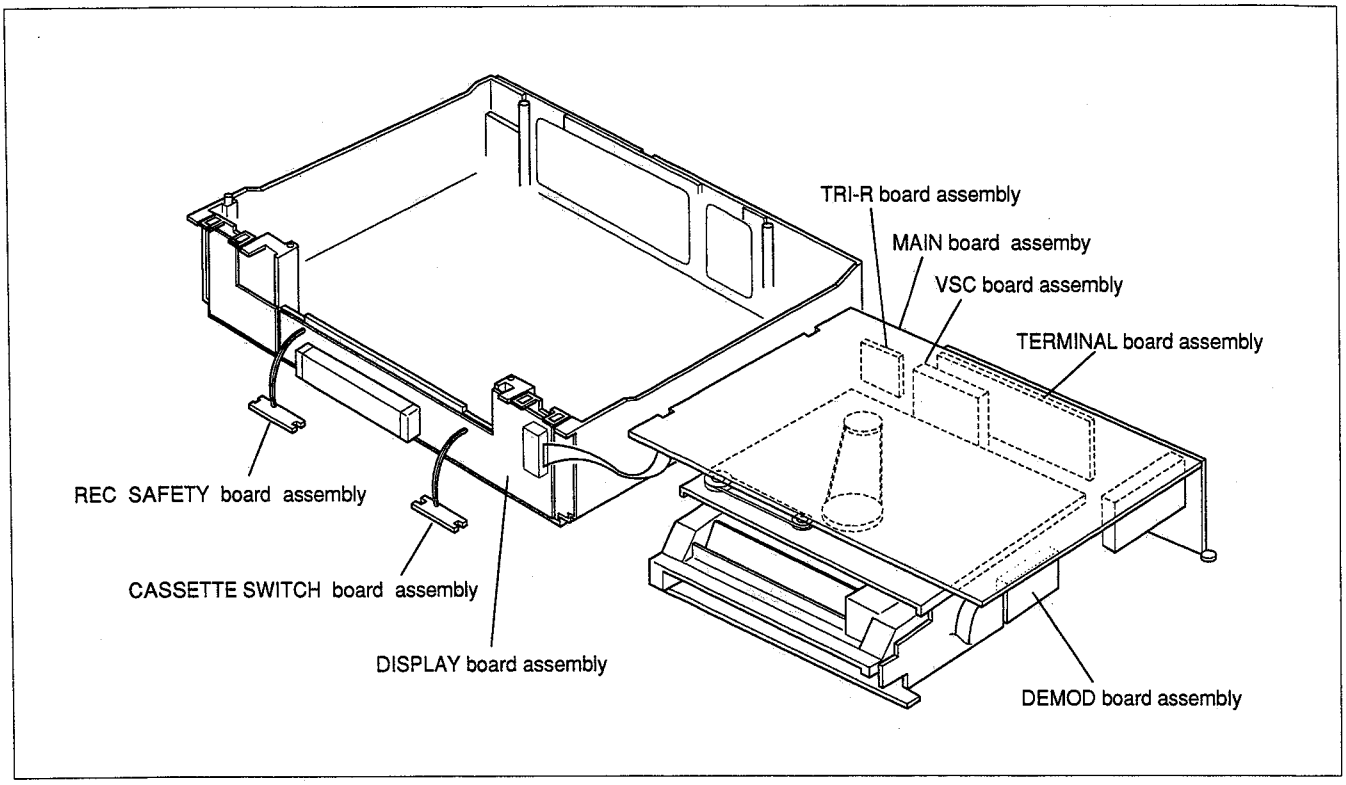


Fig. 1-5-3

1.5.2 Cautions on cassette loading when mechanism is in service position

The REC SAFETY board assembly of this set serves both for detecting the safety tab (erasure prevention tab) of a cassette and detecting a cassette loaded. Therefore, cassette loading in the condition that the mechanism is disassembled from the set needs manual operation of the switches of the REC SAFETY board assembly and the CASSETTE SWITCH board assembly.

1.5.3 Cassette loading and ejecting procedures when mechanism is in service position

(1) Insert a cassette tape halfway into the cassette housing assembly.
(2) Press the switch of the REC SAFETY board assembly to turn on.
(3) When the cassette loading begins and the cassette goes down to the bottom, immediately press the switch of the REC SAFETY board assembly to turn off and hold the status that the switch of the CASSETTE SWITCH board assembly is turned on. (Fix the switch with adhesive tape or put a screwdriver, etc. on it to leave the switch in the ON status.)
(4) In this status, desired operations (recording, playback, fast forward, rewind, etc.) can be performed.

Note: *When the mechanism is in the service position, the safety tab of cassette tape is not detected and recording on cassette tapes without safety tab is possible. Therefore, carefully choose a cassette tape for operation in this mode so as to avoid using cassette tapes of important recording.*

(5) For ejecting the cassette in this status, do it in the reverse order of cassette loading mentioned above.

Note: *If the manual operation REC SAFETY switch timing is incorrect, the cassette may be completely or partially ejected, and the cassette is often ejected incompletely. In such a case, it is possible to take out the cassette by hand.*

If it is desired to load a cassette again after the cassette is ejected in the above procedure, make sure to set the tray of the cassette housing assembly in the frontmost position prior to loading the cassette once again.

1.5.4 Opening on the chassis.

The chassis assembly has openings for easy access to the checkpoints and connector pins as shown in Fig.1-5-4.

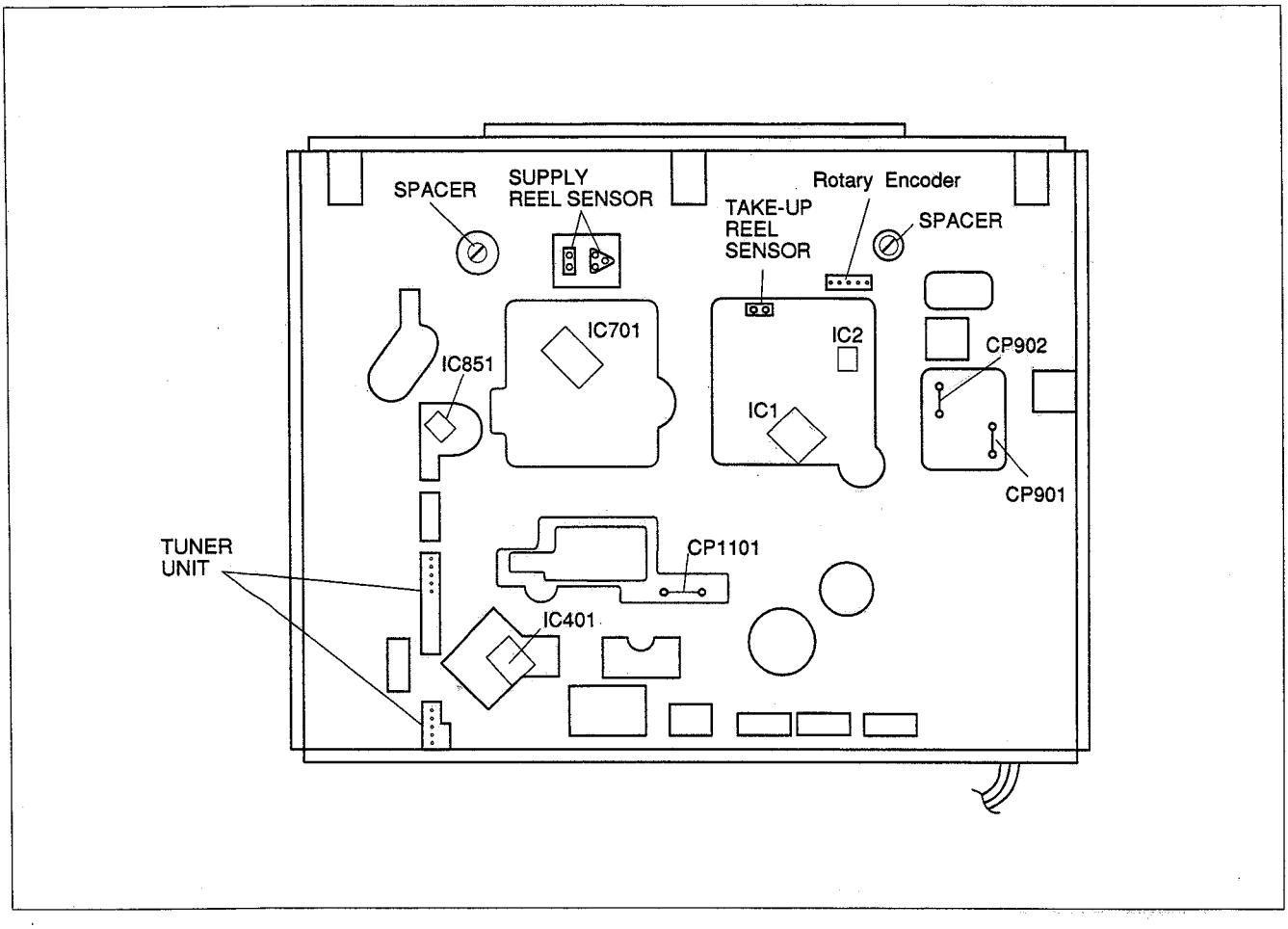


Fig. 1-5-4

1.6 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.6.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Remove the Top cover, Front panel assembly and cassette housing assembly. (See Page 1-2, 1-3)
(3) Connect TP1202 (GND) and TP1201 (TEST) on the DISPLAY board assembly with a jump wire.
(4) Connect VCR to AC.
(5) Press the POWER button.
(6) Select the desired operation modes with the operation buttons or remote controller.

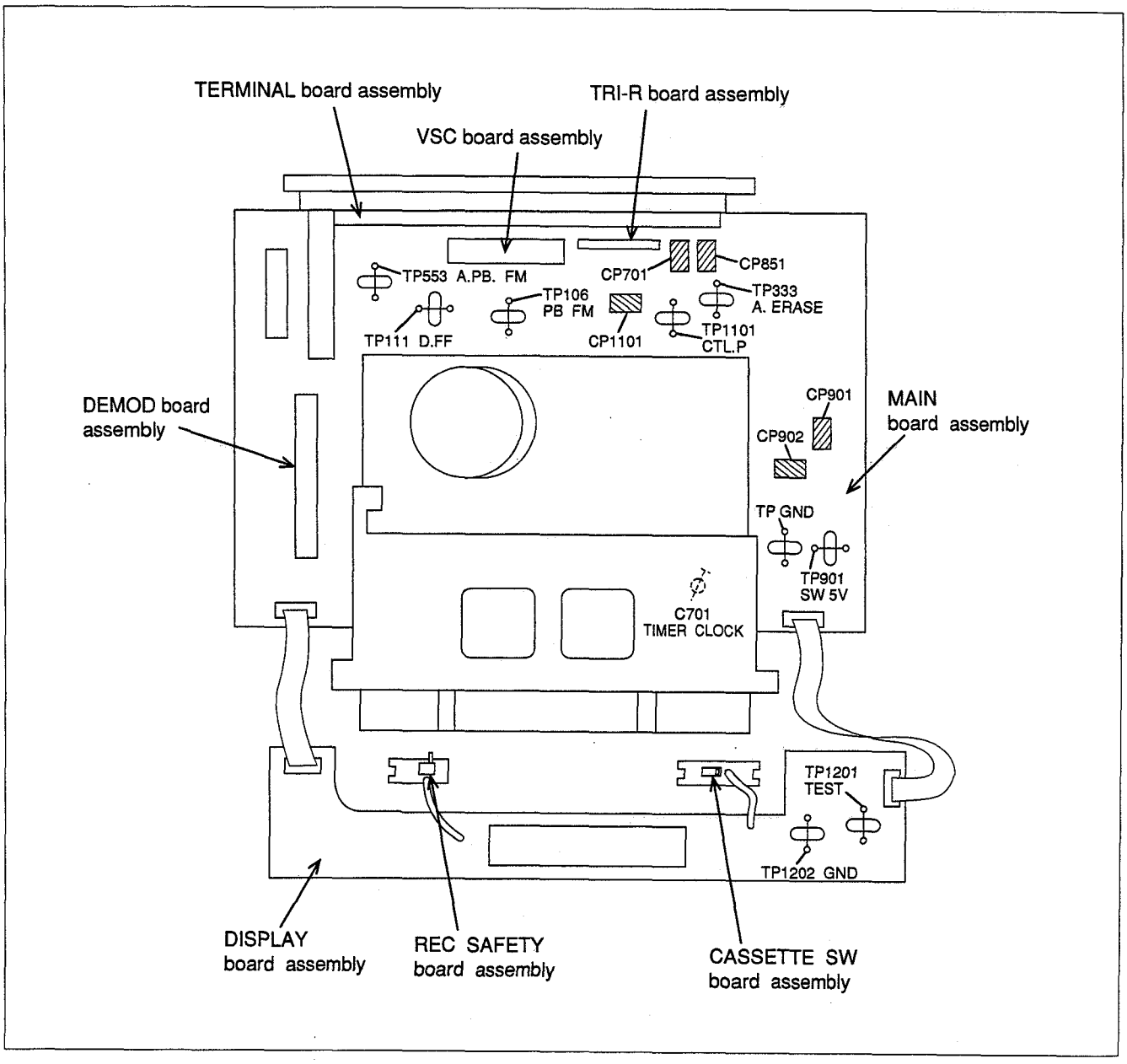


Fig. 1-6-1

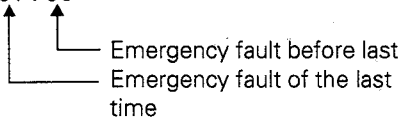
1.7 EMERGENCY DISPLAY FUNCTION

This product has the function to store the last two previous emergency faults which can be displayed in the FDP when servicing.

1.7.1 How to display record of an emergency faults

(1) Press "N" button of the presetting unit more than 2 seconds. and the two previous emergency faults are shown in the FDP.
(2) Press "N" button of the presetting unit again when return the normal mode.

[Example] E : 01 : 03



[Example] E : —— : —— ← No record of emergency

1.7.2 Detail of emergency faults

FDP	Symptom	Detect mode	Resulting mode
E : 01	Loading motor rotates for more than 8 Sec without shift to next mode.	Loading	POWER OFF
E : 02	Loading motor rotates for more than 8 Sec without shift to next mode.	Unloading	POWER OFF
E : 03	TU REEL FG input is absent(for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP→ POWER OFF
E : 04	DRUM FF input is absent(for more than 3 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP
E : 06	CAPSTAN FG input is absent(for more than 1 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP→ POWER OFF
E : 07	No SWD5V/12V	POWER ON	POWER OFF
E : 08	Initialized action of DD (Dynamic Drum) is not complete for less than 4 seconds.	Connect VCR to AC	STOP
E : 09	DD drive motor is not rotate for more than 2.5 seconds.	on TIME SCAN	STOP

Table 1-7-1 EMERGENCY FAULTS

1.7.3 How to clear emergency record

Press the COUNTER RESET button on the remote controller in the emergency record display mode,and the record of the emergency fault(s) is cleared.

SECTION 2
MECHANISM ADJUSTMENT

PMC 0013A-E or PMC 0015A-M is used in this model.
For the MECHANISM ADJUSTMENT and PARTS LIST, please refer to the MECHANISM ASSEMBLY of the Service Manual (No. 82595).

SECTION 3
ELECTRICAL ADJUSTMENT

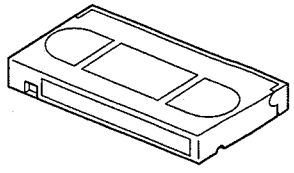
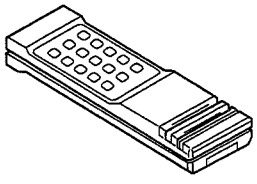
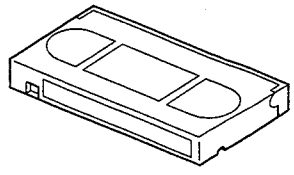
3.1 PRECAUTION

Electrical adjustment are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also do not attempt these adjustments unless the proper equipments is available.

3.1.1 Required test equipment

① Colour television or monitor
② Oscilloscope: wide-band,dual-trace,triggered delayed sweep
③ Frequency counter
④ Digital voltmeter
⑤ Signal generator: RF/IF sweep/maker
⑥ Signal generator: PAL colour bar, stairstep
⑦ Recording tape
⑧ Numeric remote controller(provided)

3.1.2 Required adjustment tools

Alignment tape (SP,stairstep) MHPE	Presetting unit PTU940008
	
Alignment tape (LP,stairstep) MHPE-L	
	

3.1.3 Colour bar signal,colour bar pattern

● Colour bar signal

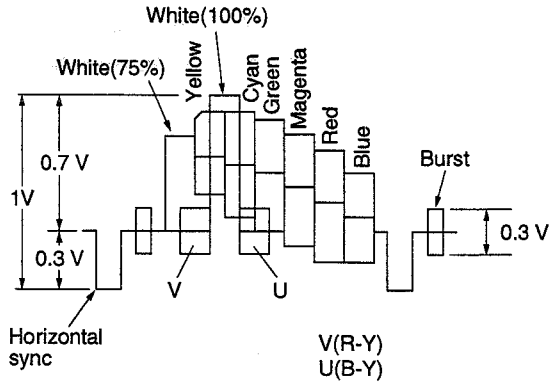


Fig.3-1-1 Colour bar signal waveform

● Colour bar pattern

	White	Yellow	Cyan	Green	Magenta	Red	Blue
(75%) →							
	V	U	White 100%			Black	

Fig.3-1-2 Colour bar pattern

3.2 SERVO CIRCUIT

Notes: • *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
• *Set VCR to the mode A by remote controller.*
• *Use only buttons "O", depressing other buttons during adjustment may cause adjustment errors.*

3.2.1 PB switching point

Signal	• Alignment tape [MHPE],Stairstep
Mode	• PB
Equipment	• Oscilloscope
Measurement point	• J1411- pin 19 (VIDEO OUT) [TERMINAL BOARD]
Trigger slope (-)	• TP111(DRUM FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• 6.5 ± 0.5H

(1) Connect an oscilloscope to J1411- pin 19 (VIDEO OUT) and external trigger from TP111 (negative slope).
(2) Playback the stairstep signal of the alignment tape.
(3) Press the "O" button of the presetting unit.
(4) The adjustment is performed automatically.
Once the adjustment is performed, the VCR will go into the STOP mode.

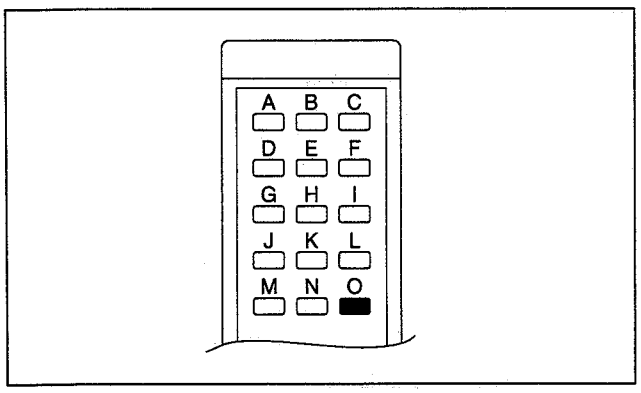


Fig.3-2-1 Presetting unit

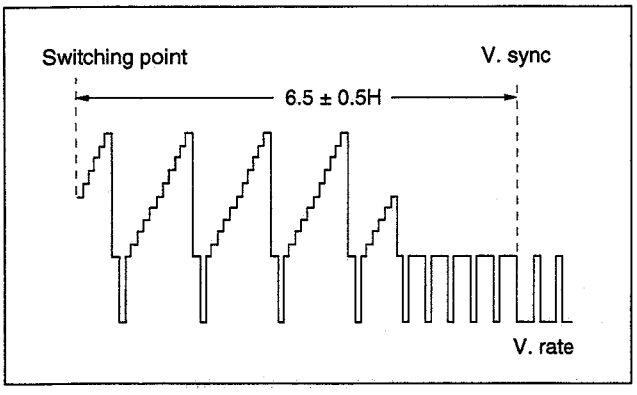


Fig.3-2-2 PB switching point

3.2.2 Slow tracking preset

Signal	• Tuner or colour bar
Mode	• SP, REC → PB(SLOW)
Equipment	• TV-Monitor
Adjustment tool	• Presetting unit [PTU94008]
Specification	• Minimum noise

Note : *Set VCR to the mode A by remote controller.*
Use only buttons "B" and "C", depressing other buttons during adjustment may cause adjustment errors.

(1) Record a colour bar signal in the SP mode.
(2) Playback recorded signal on the FWD slow mode.
(3) Observe the display on the TV monitor and adjust for optimum noise condition (best tracking) by depressing "B " or "C " buttons of the presetting unit.
(4) Depress the STOP button.
(5) Confirm that the bar noise is not visible on the TV monitor in the slow mode.
(6) Repeat steps (2) to (5) in the REV slow mode.

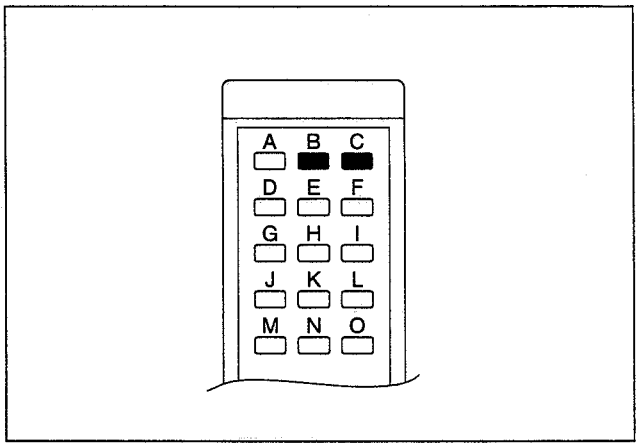


Fig.3-2-3 Presetting unit

3.2.3 Dynamic drum preset

Signal	• Alignment tape [MHPE-L], Stairstep
Mode	• Automatic tracking OFF
Equipment	• Oscilloscope
Measurement point	• TP106 (PB FM)
Trigger slope (–)	• TP111 (DRUM FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• FM waveform flat

Note : *Set VCR to the mode A by remote controller.*

(1) Connect an oscilloscope to TP106 and external trigger from TP111 (positive slope).
(2) Playback the LP stairstep portion of the alignment tape at LP 2x mode.
(3) Set the automatic tracking control to the OFF by simultaneously pressing the ▰/▰▰ button on the remote controller.
(4) Adjust for maximum level of playback FM waveform by depressing TV PROG. "+" or "-" buttons.
(5) Adjust by pressing "M+D" or "M+E" buttons of presetting unit for FM waveform is flat as shown in Fig. 3-2-5.
(6) Adjust for half level of playback FM waveform from maximum level by depressing TV PROG. "+" or "-" buttons.
(7) Readjust by pressing "M+D" or "M+E" buttons of presetting unit for FM waveform is flat as shown in Fig. 3-2-5.
(8) Record the color bar signal by LP mode and play it back in FWD slow mode.
(9) Repeat steps (4) and (5).

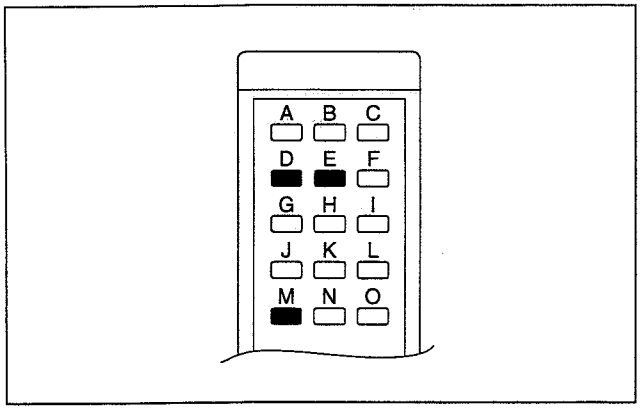


Fig. 3-2-4 Presetting unit

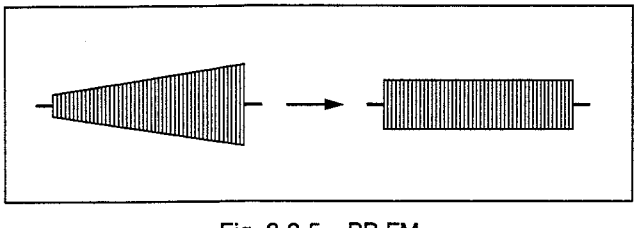


Fig. 3-2-5 PB FM

3.3 VIDEO CIRCUIT

Notes: • *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
• *Set VCR to the mode A by remote controller.*

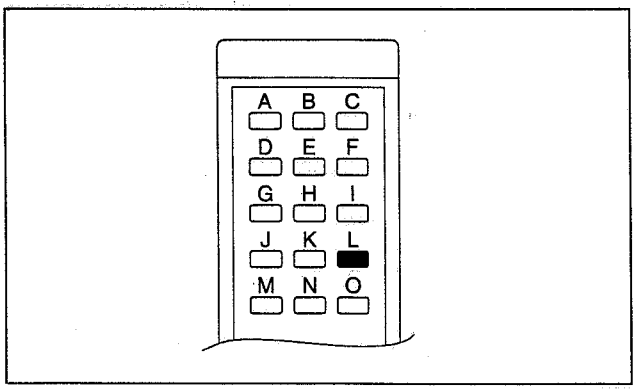


Fig.3-3-1 Presetting unit

3.3.1 Auto picture

Signal	• Monoscope
Mode	• BEST : OFF • REC then PB • SP/LP
Adjustment tool	• Presetting unit[PTU94008]
Specification	• STOP mode

(1) Set the B.E.S.T feature to OFF on MENU screen.
(2) Record a monoscope signal in the SP mode.
(3) Playback the recorded signal.
(4) Press the "L" button of the presetting unit during playback.
(5) Confirm that VCR will go into the STOP mode.
(6) Repeat steps (2) to (5) in the LP mode.

3.4 SYSCON CIRCUIT

Notes: • *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
• *When perform this adjustment,remove the MECHANISM assembly.*

3.4.1 Timer clock

Signal	• No signal
Mode	• EE
Equipment	• Frequency counter
Measurement point	• TP702 round(SYS.CLK)
Adjustment part	• C701 (TIMER CLOCK)
Specification	• 1024.008 ± 0.001 Hz [976.5549 ± 0.0010 usec]

(1) Connect the frequency counter to TP702 round and GND.
(2) Connect the short wire between TP701 round and Vcc(5V).
(3) Short the leads of capacitor C704 once in order to reset IC701.
(4) Disconnect the short wire then connect it again quickly.
(5) Adjust C701 for 1024.008 ± 0.001 Hz.
(976.5549 ± 0.0010 usec)

3.5 DEMODULATOR CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the DEMODULATOR BOARD.*

3.5.1 STEREO SEPARATION

Signal	• Sweep generator output (90 dBμ, 1 kHz)
Mode	• EE
Equipment	• Oscilloscope
Measurement point	• IC401-pin 4 [MAIN board]
Adjustment part	•VR1501 (SEPARATION)
Specification	• Minimum

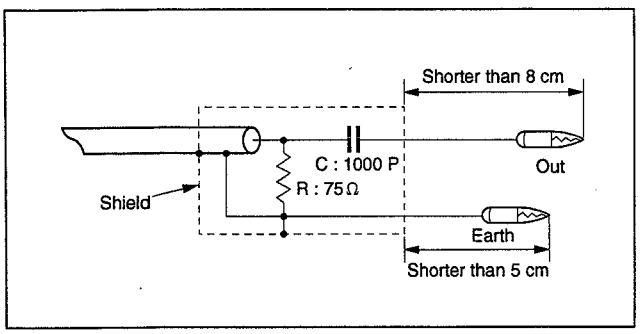


Fig. 3-5-1 Sweeper probe

(1) Use a sweeper probe as shown in Fig. 3-5-1.
(2) Supply 1 kHz R-only modulated IF signal to IF terminal of U/V tuner (front end).
(3) Connect an oscilloscope to IC401-pin 4.
(4) Adjust VR1501 for minimum output level.

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

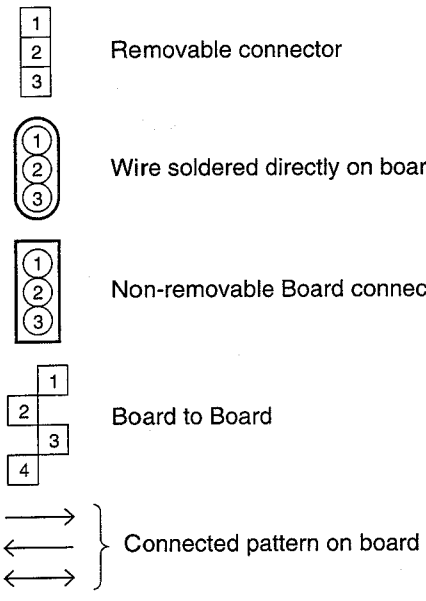
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or IN4148M (refer to parts list).

2. Indications of control voltage

AUX : Active only at high

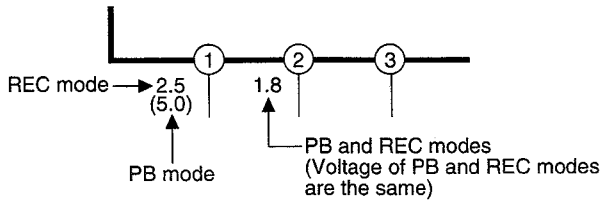
$\overline{\text{AUX}}$ or AUX(L) : Active at low

3. Interpreting Connector indications



4. Voltage measurement

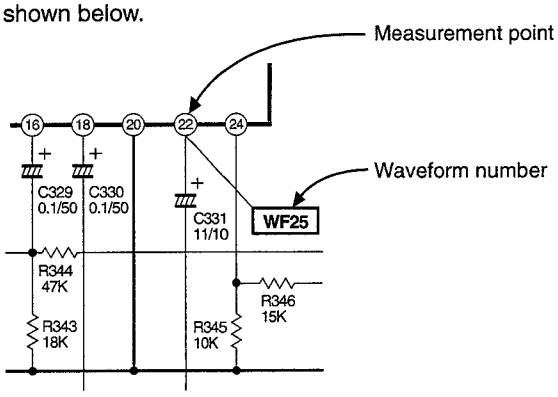
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



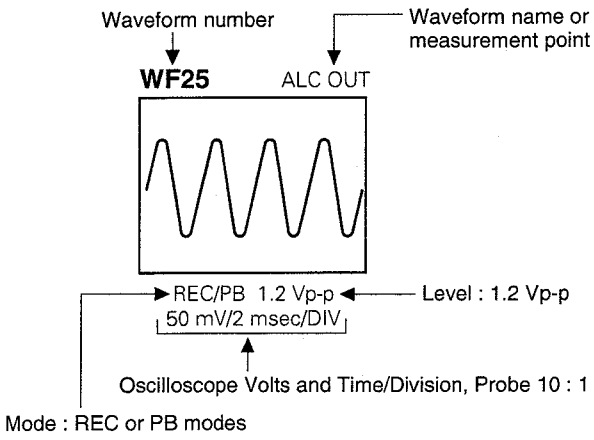
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.



5) Waveform indications



6. Signal path Symbols

The arrows indicate the signal path as follows.

Playback signal path

Playback and recording signal path

Recording signal path
(including E-E signal path)

Capstan servo path

Drum servo path

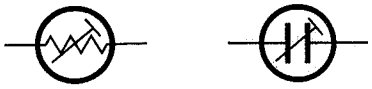
(Example)

R-Y Playback R-Y signal path

Y Recording Y signal path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

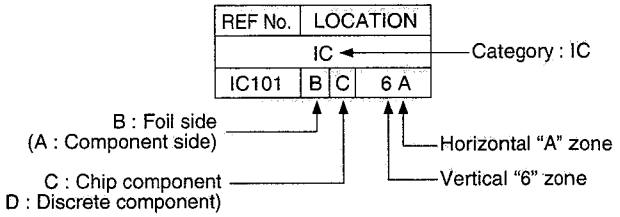
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

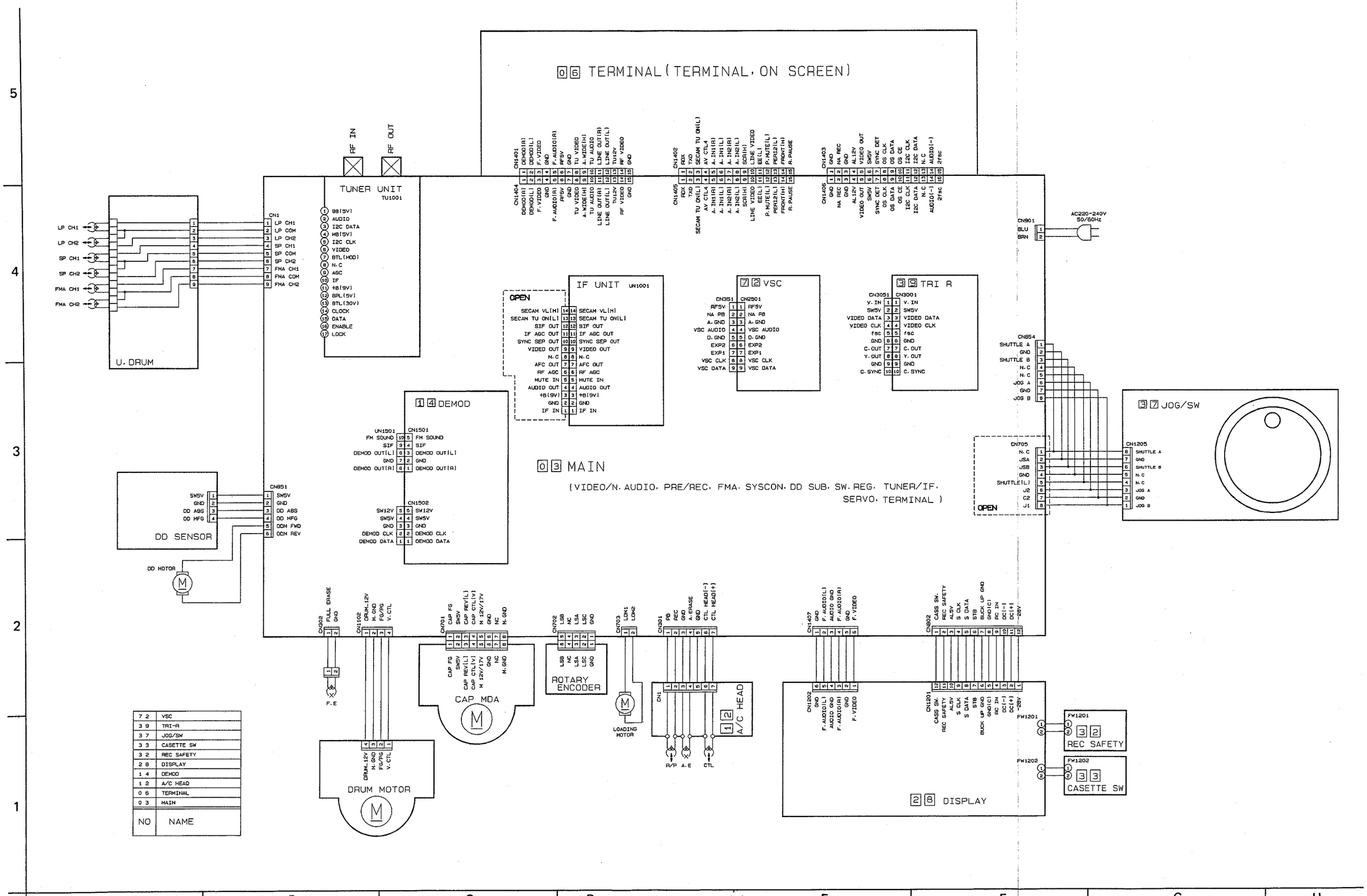
Parts location are indicated by guide scale on the circuit board.



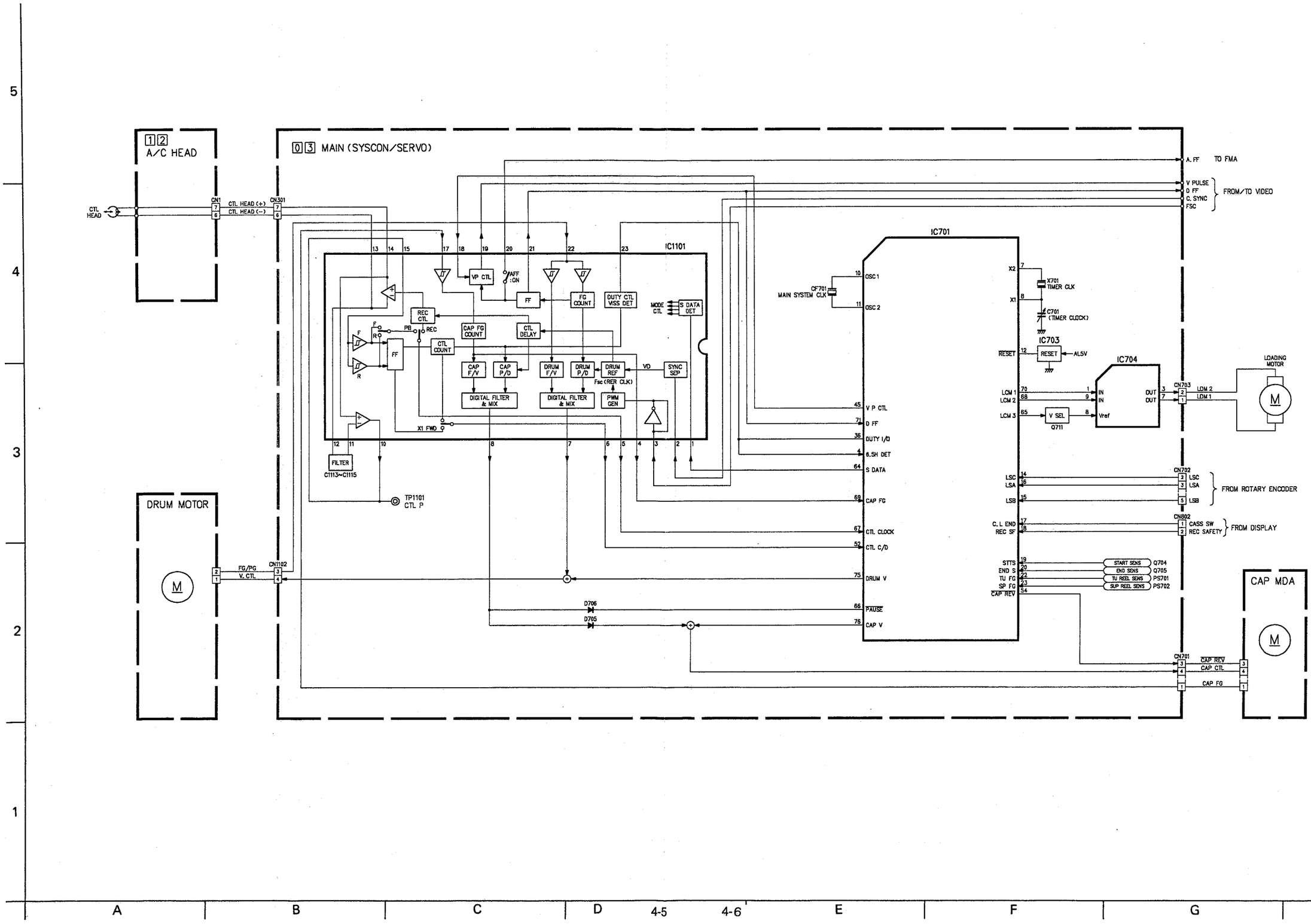
Note:

For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

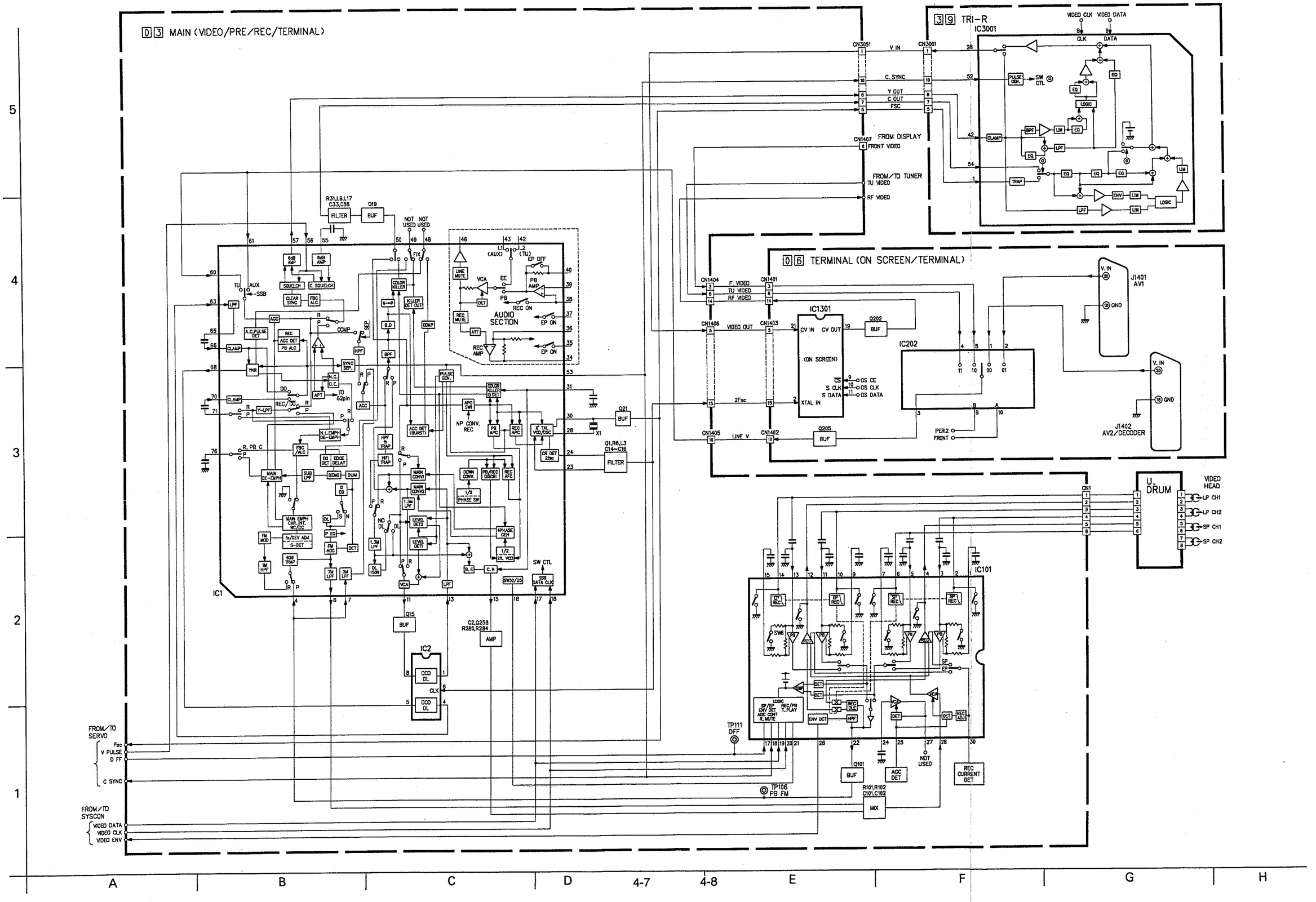
4.1 BOARD INTERCONNECTION



4.2 SYSTEM CONTROL BLOCK DIAGRAM



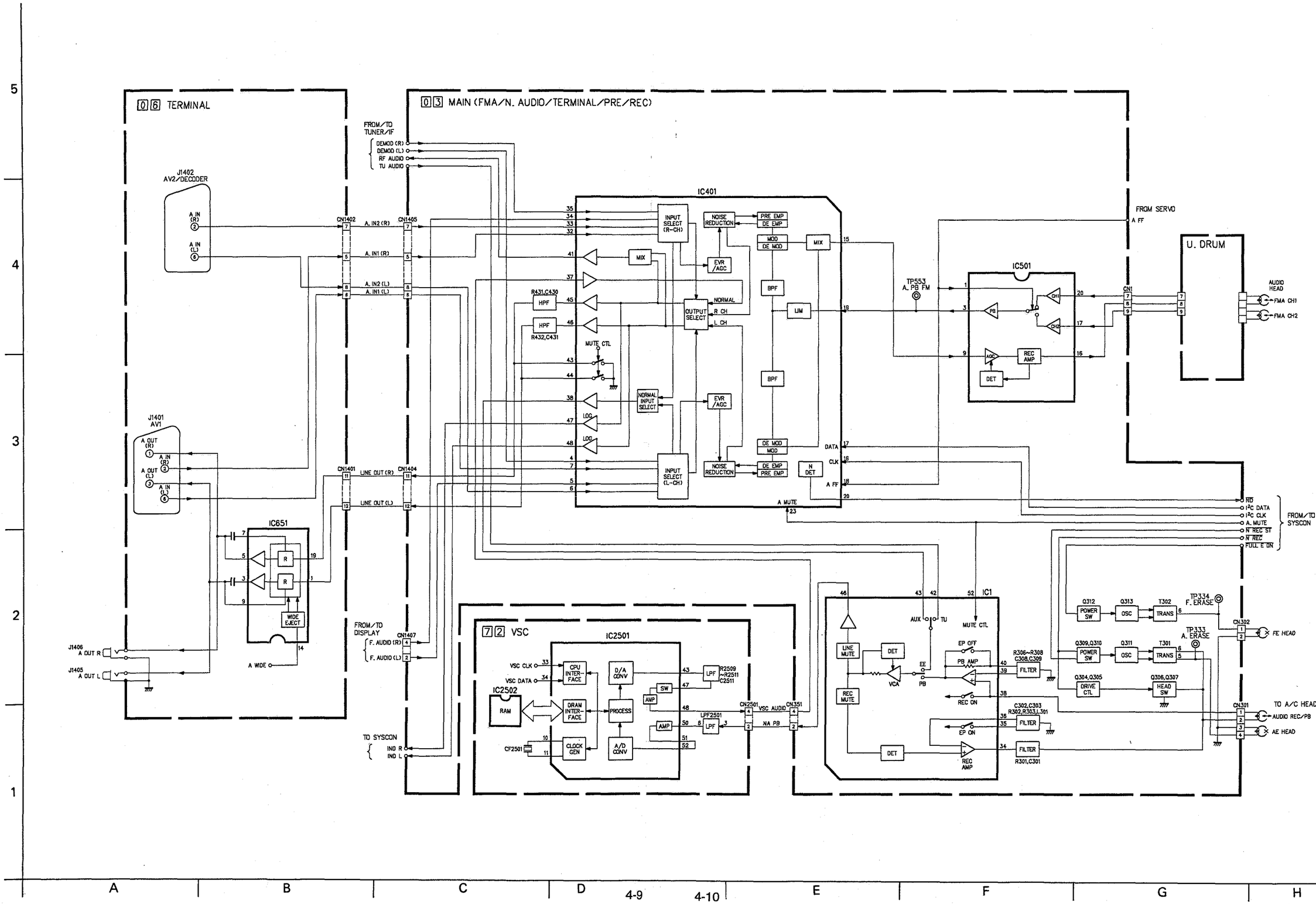
4.3 VIDEO BLOCK DIAGRAM



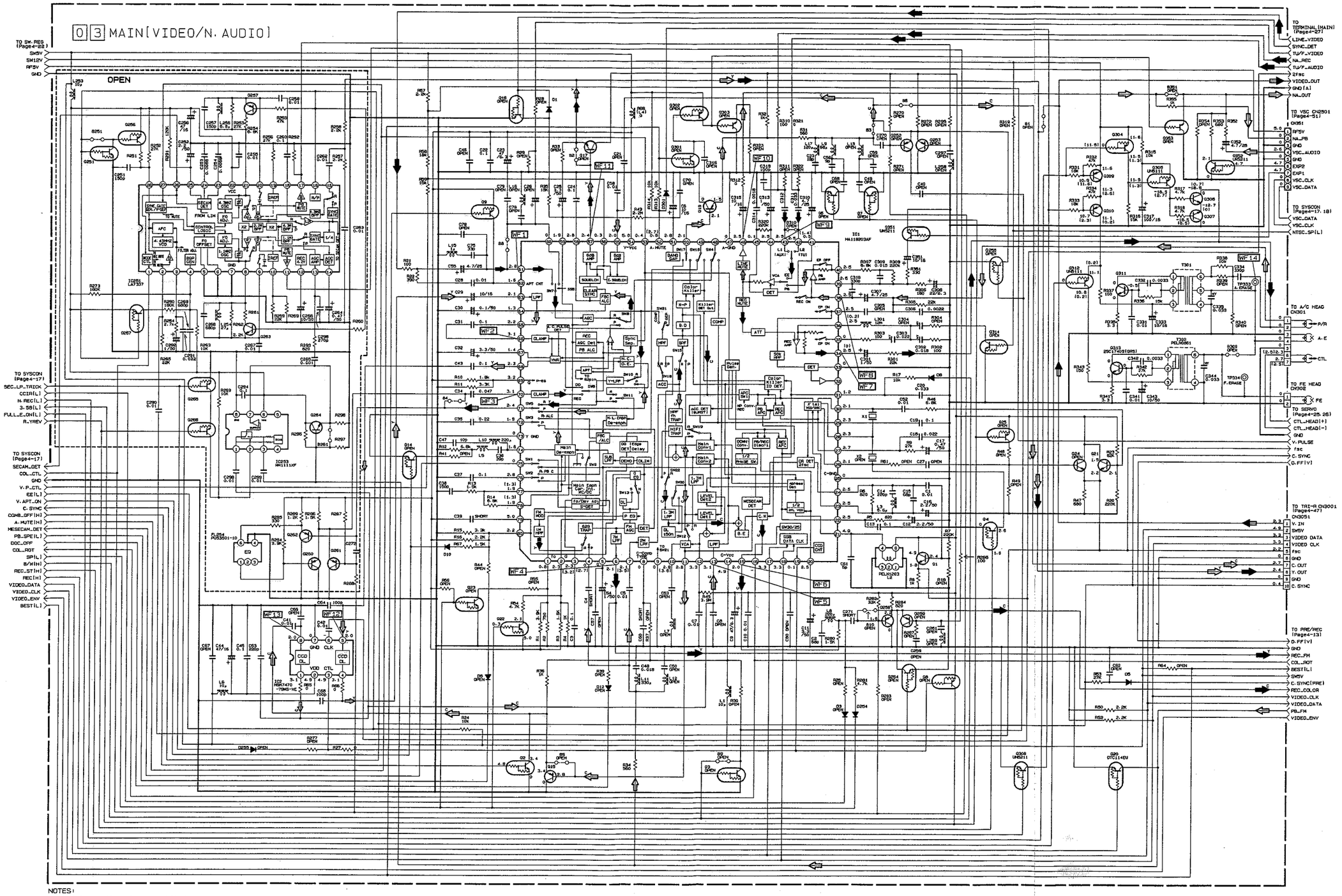
A B C D 4-7 4-8 E F G H

1 2 3 4 5

4.4 AUDIO BLOCK DIAGRAM



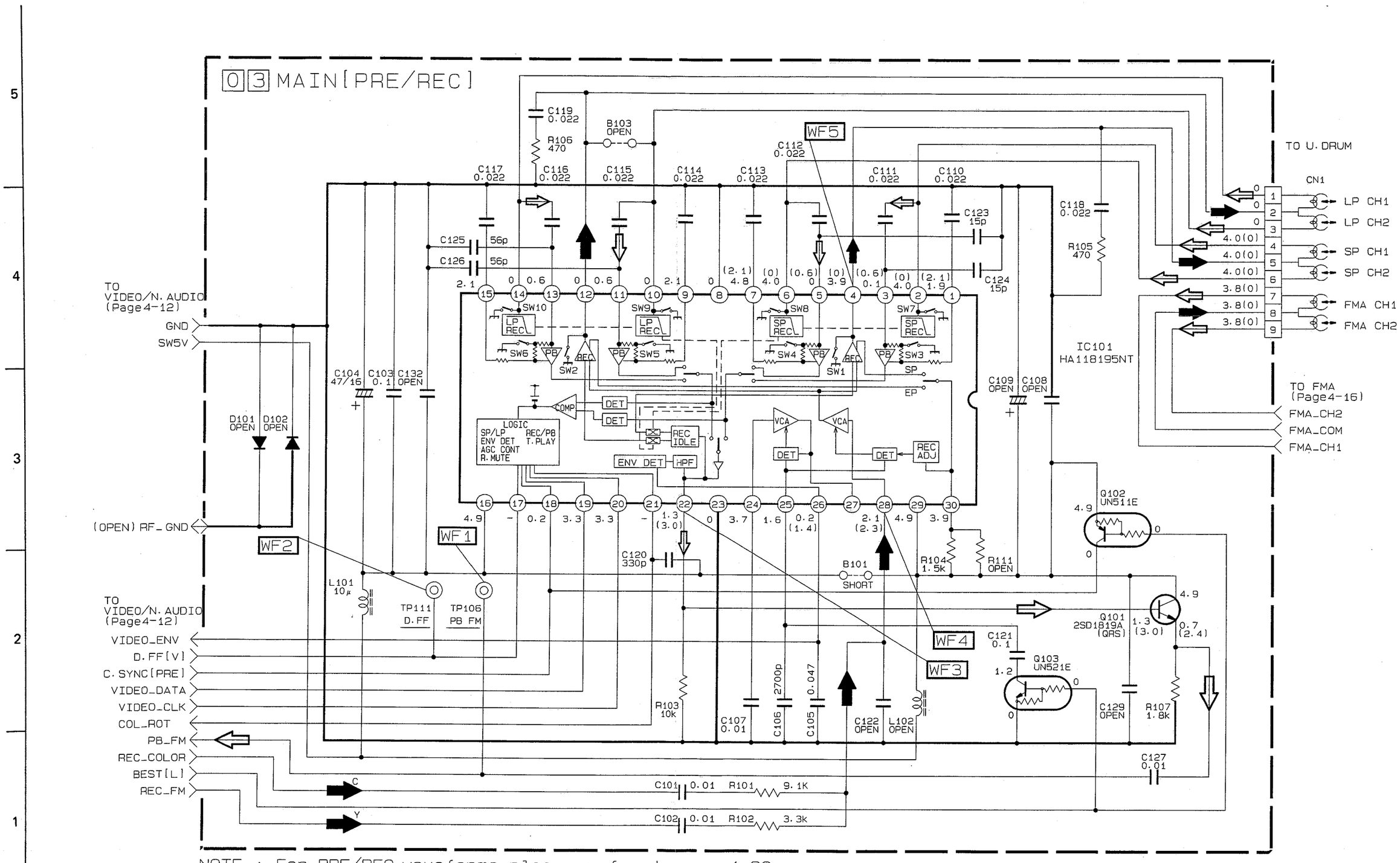
4.5 VIDEO AND N.AUDIO SCHEMATIC DIAGRAM



NOTES:

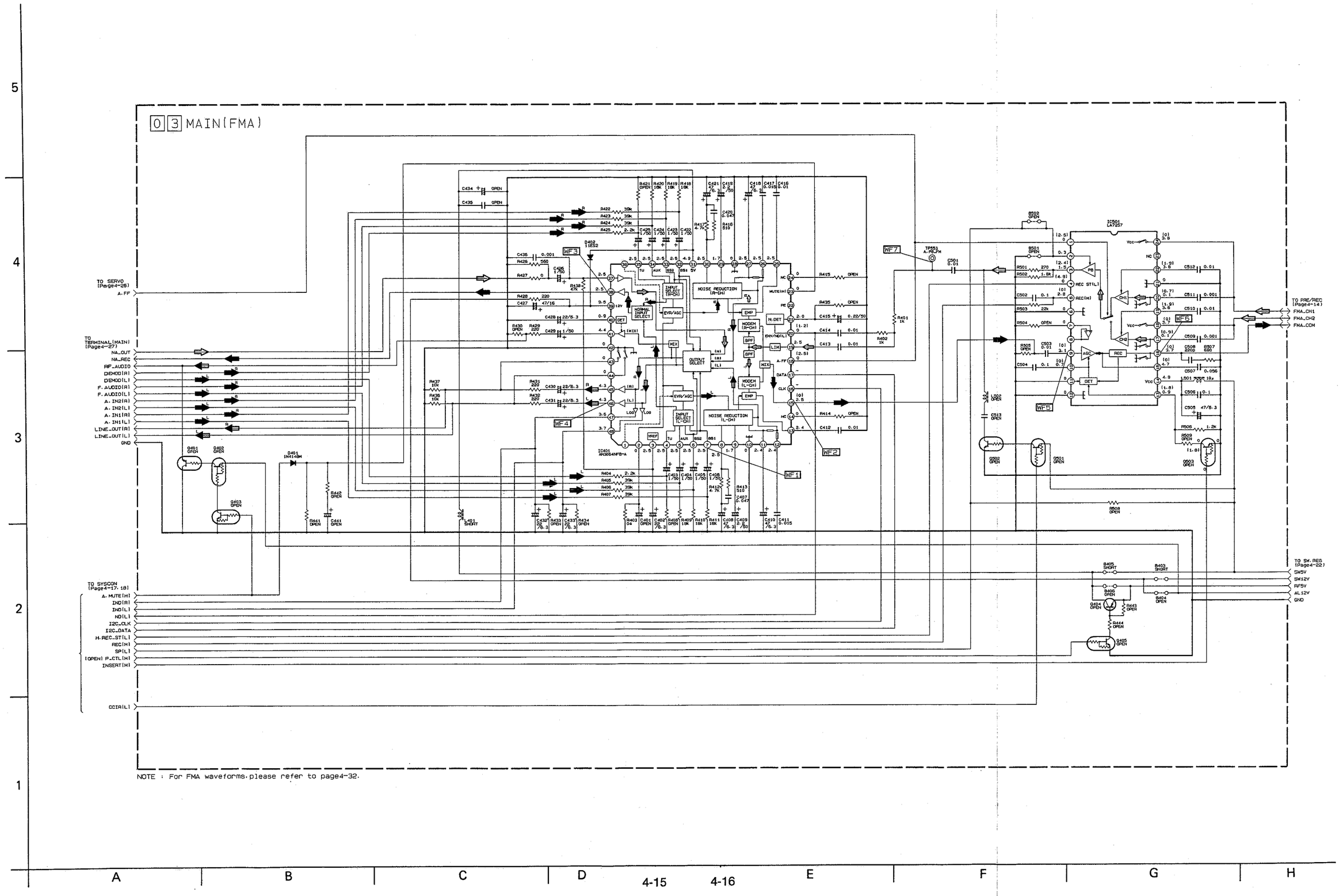
1. Unless otherwise specified.
   All NPN type transistors are 2SD1819A(QRS).
   All PNP type transistors are 2SB1218A(QR).
   All NPN type digital transistors are UN521E.
   All PNP type digital transistors are UN511E.
   All diodes are 1N4148M.
2. For VIDEO/N.AUDIO waveforms, please refer to page4-32.

4.6 PRE/REC SCHEMATIC DIAGRAM



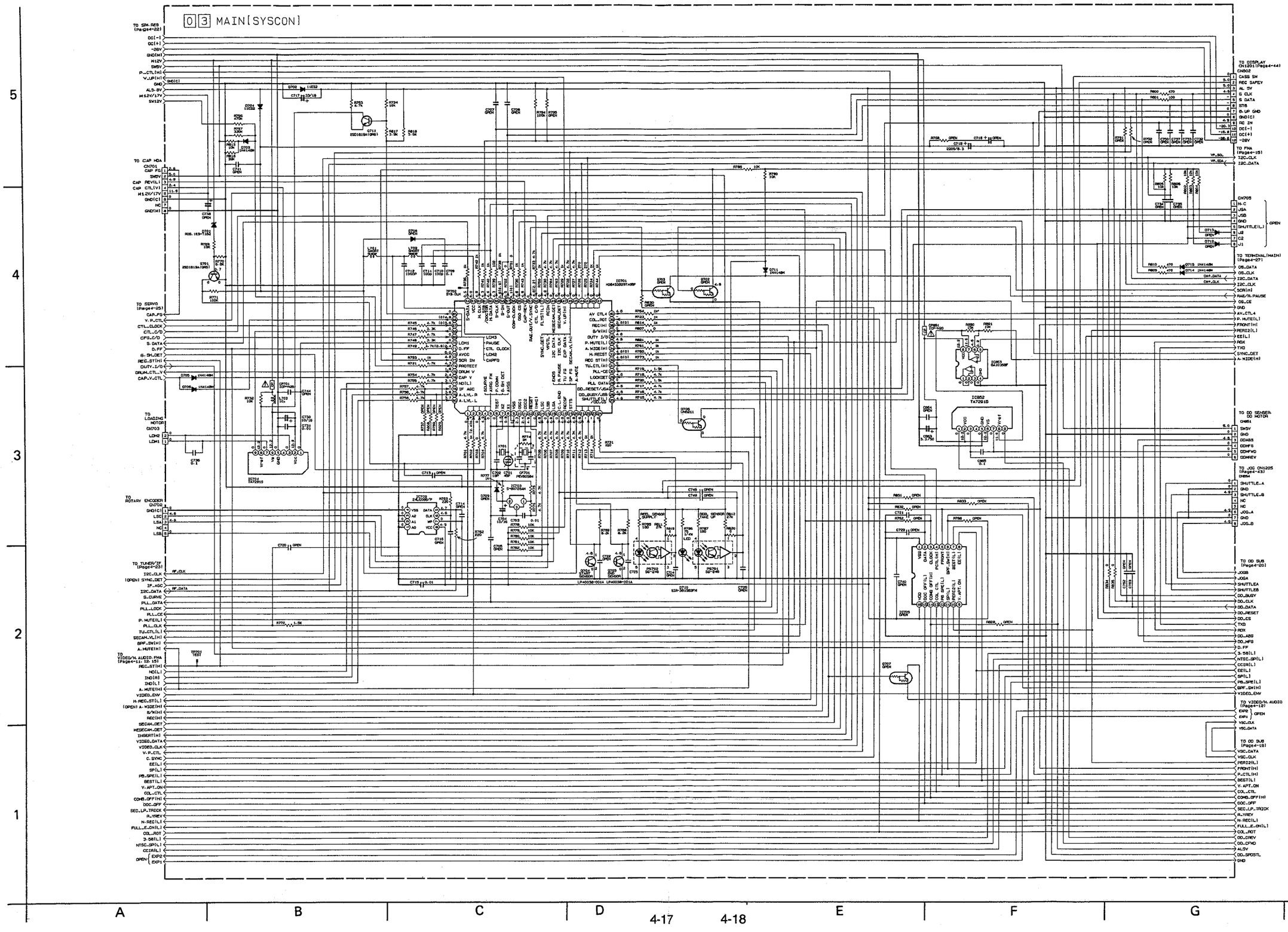
NOTE : For PRE/REC waveforms, please refer to page4-32.

4.7 FMA SCHEMATIC DIAGRAM

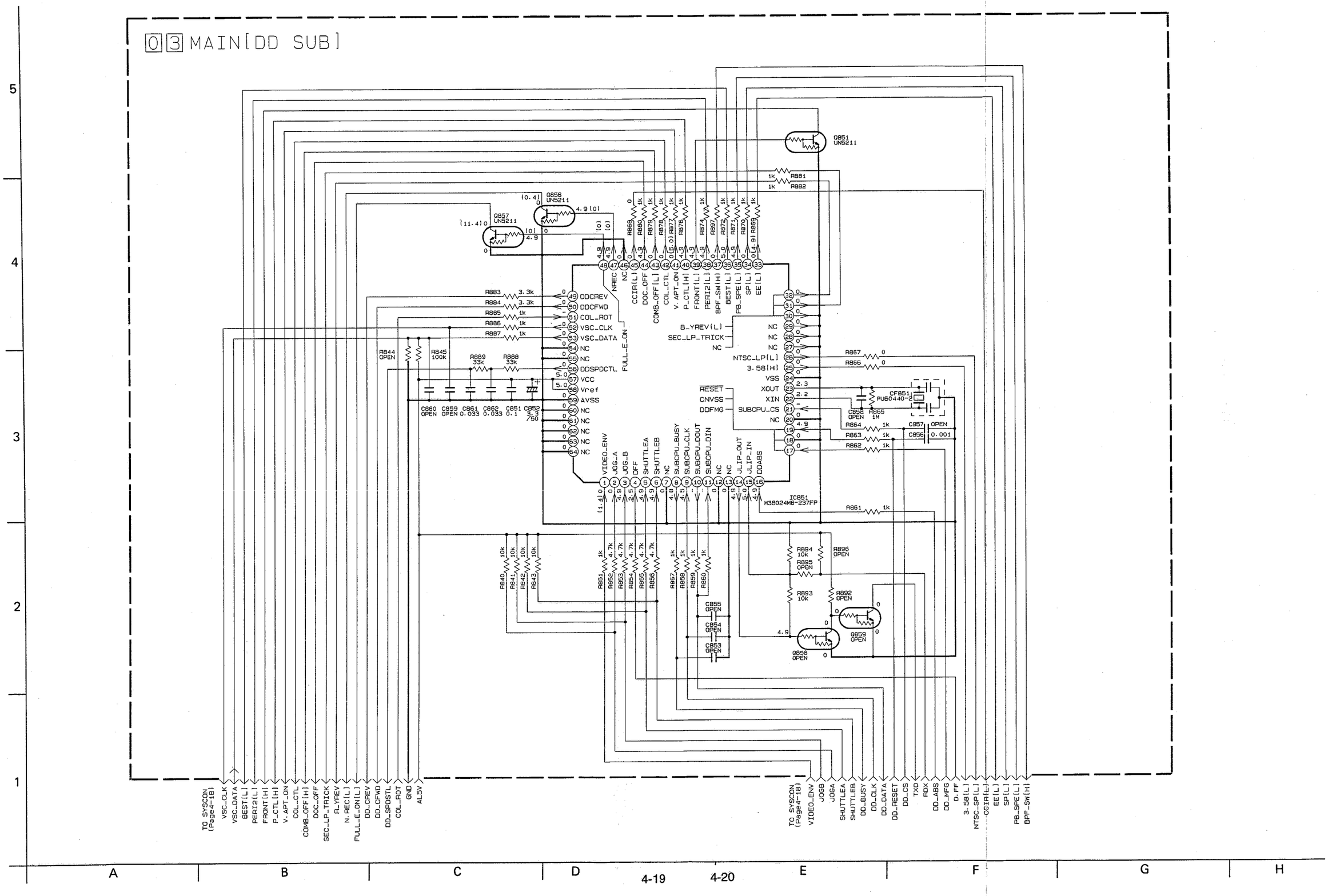


NOTE : For FMA waveforms, please refer to page4-32.

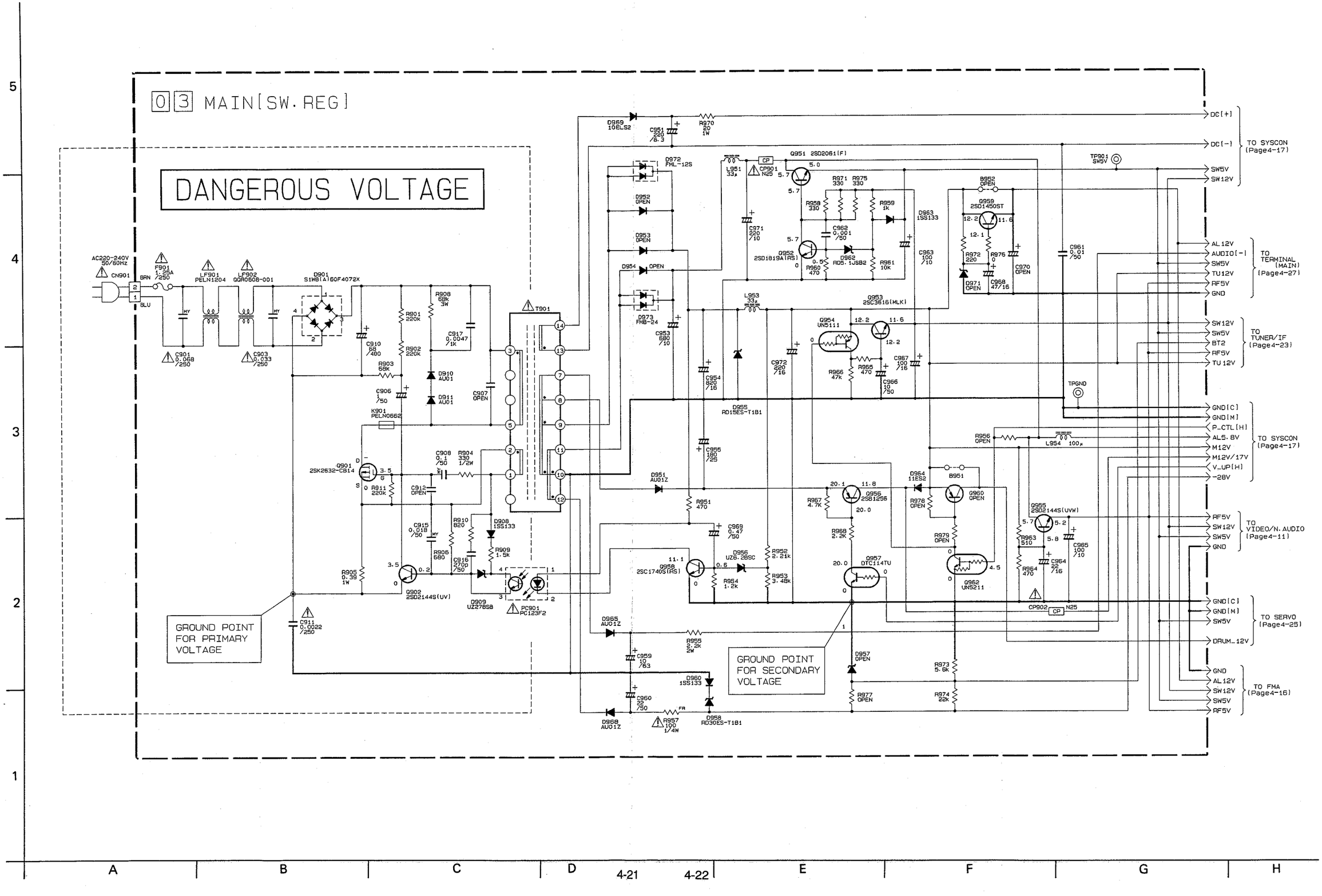
4.8 SYSTEM CONTROL SCHEMATIC DIAGRAM



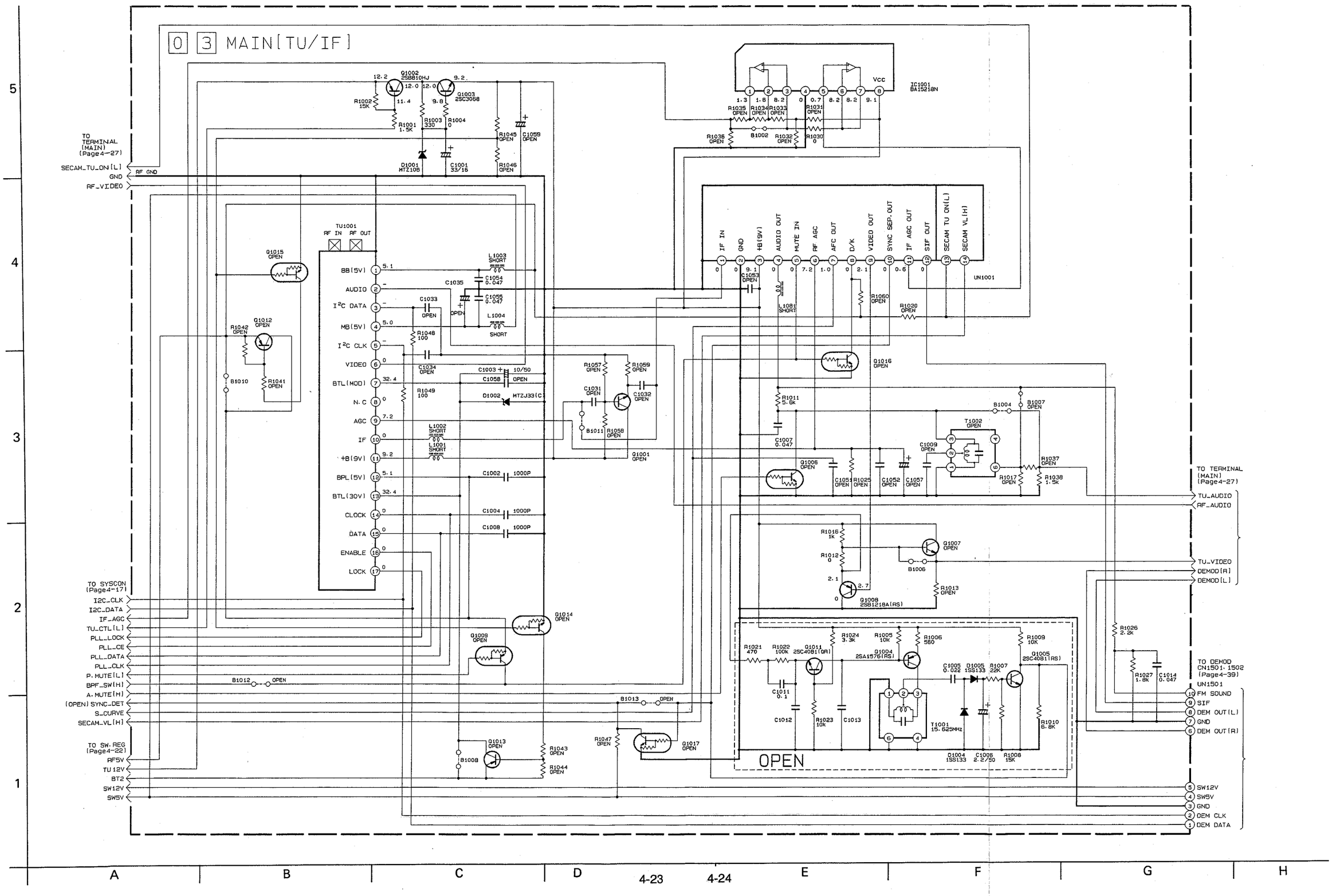
4.9 DD SUB SCHEMATIC DIAGRAM



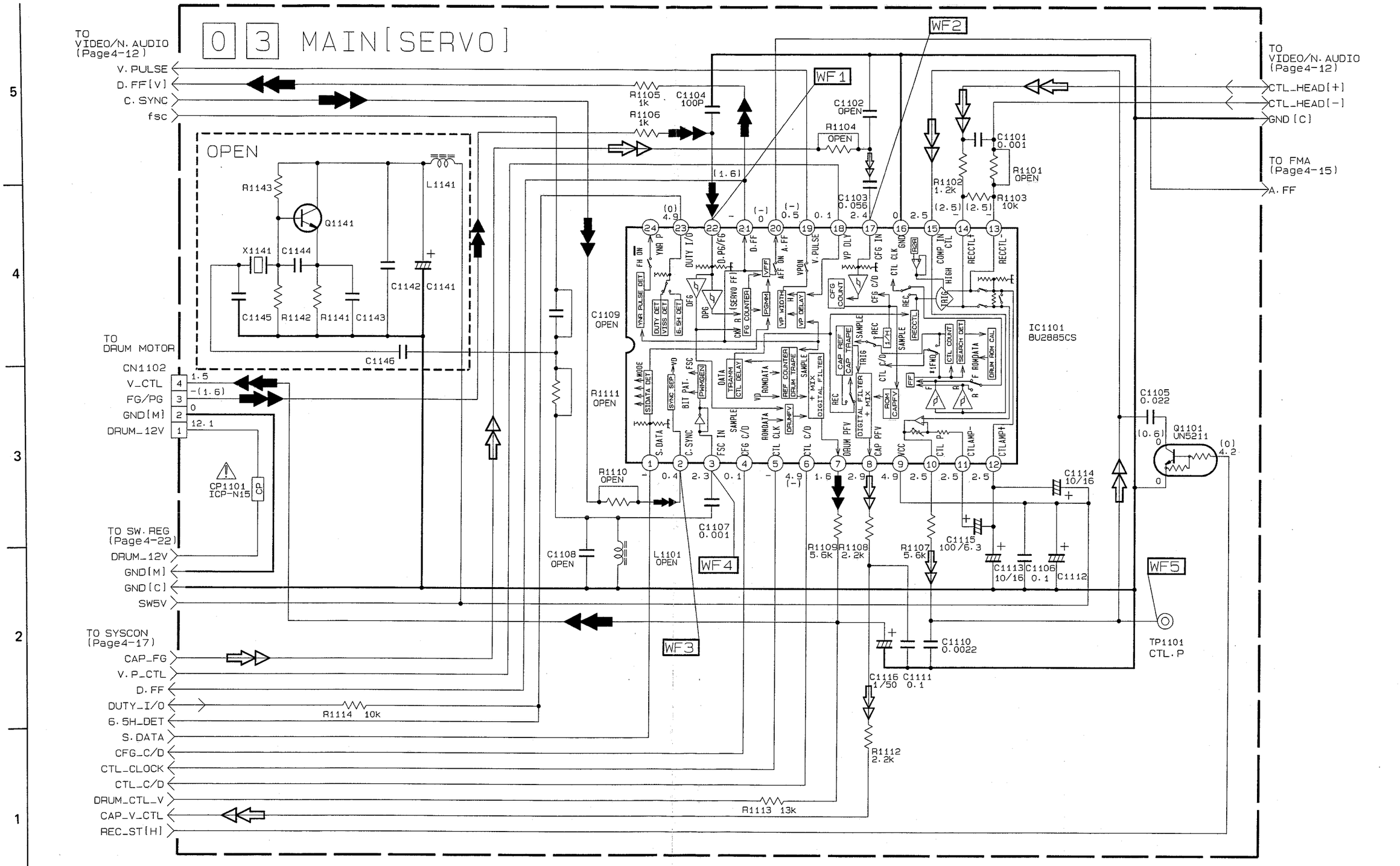
4.10 REGULATOR SCHEMATIC DIAGRAM



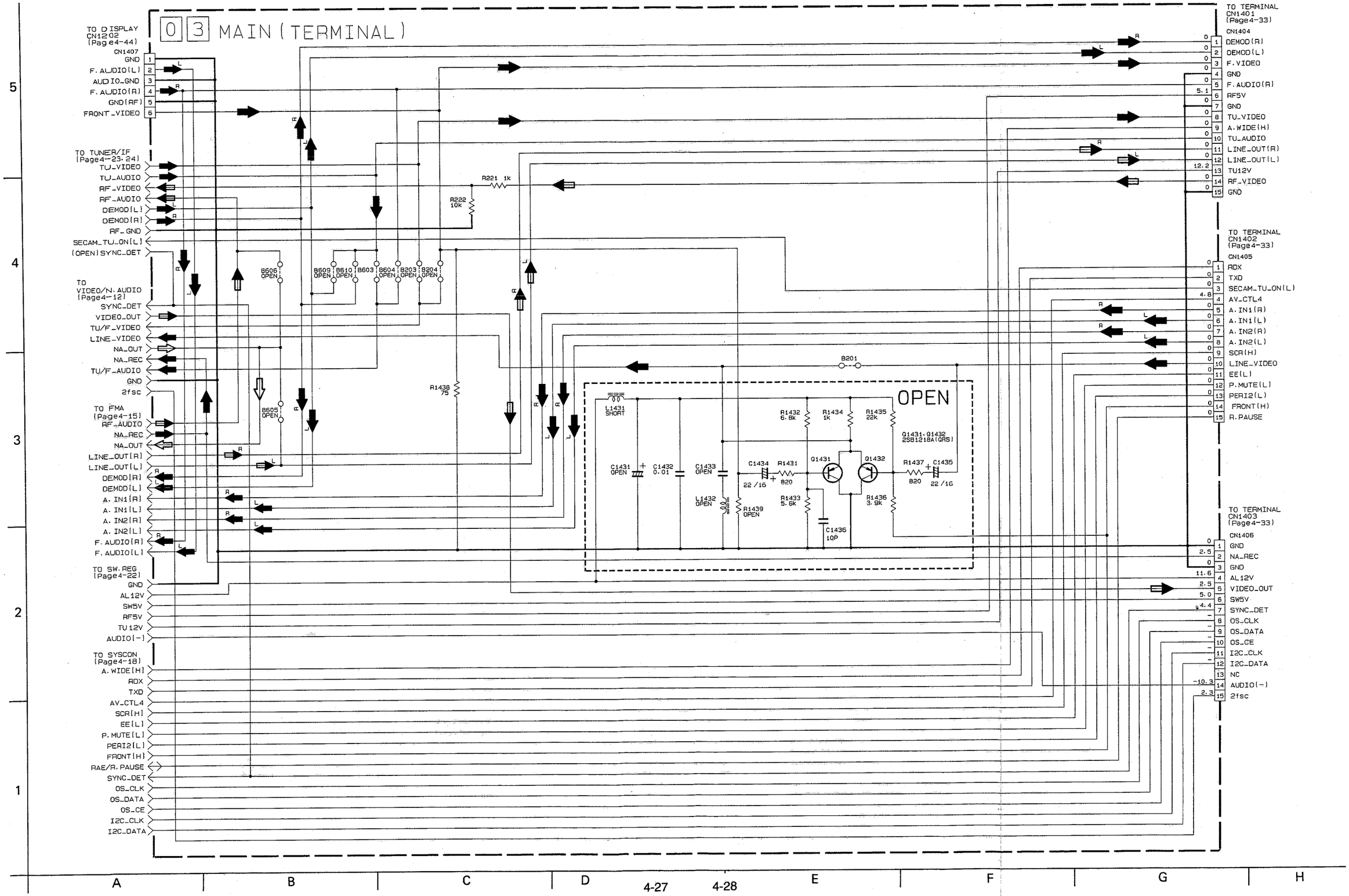
4.11 TUNER SCHEMATIC DIAGRAM



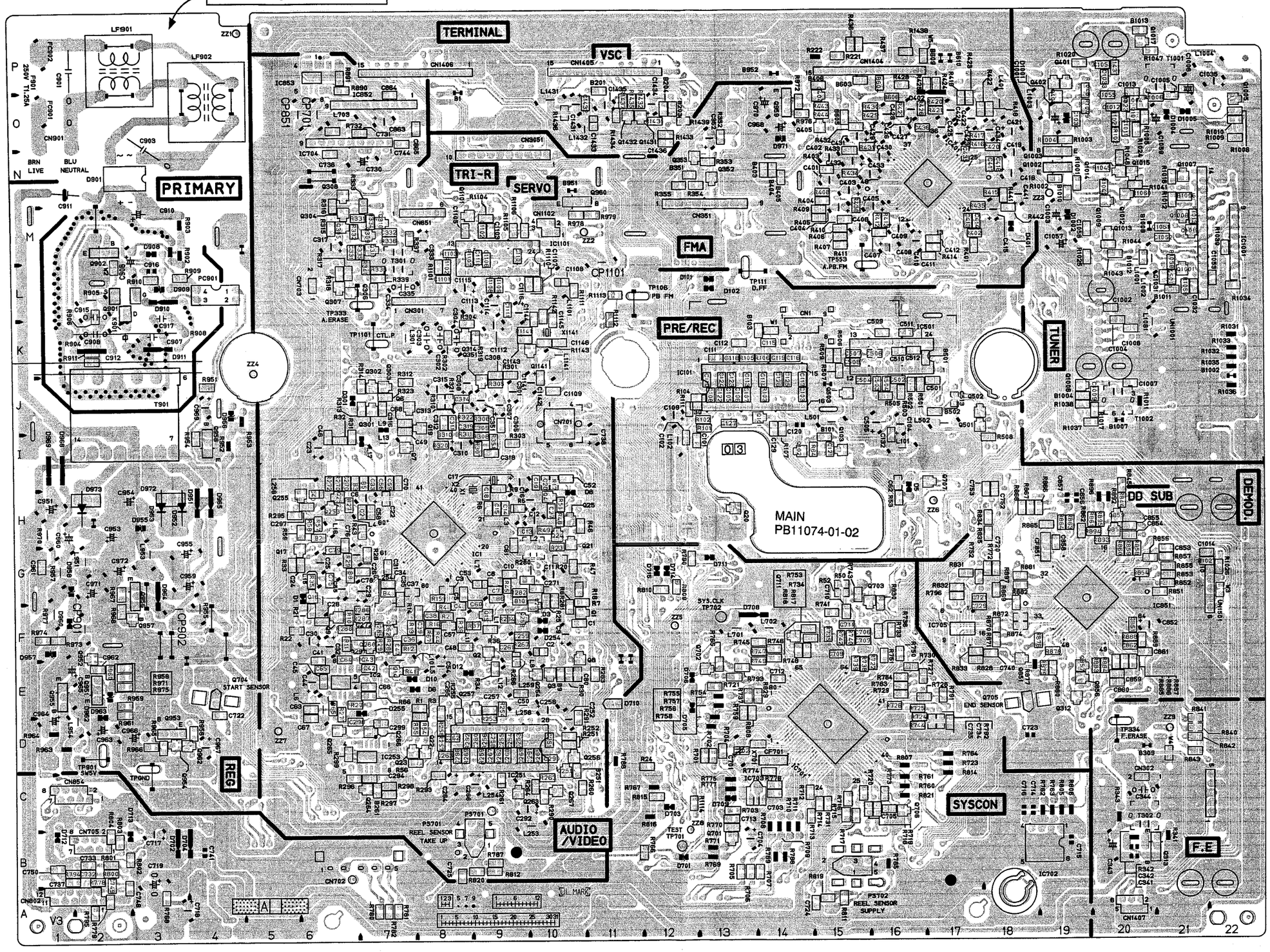
4.12 SERVO SCHEMATIC DIAGRAM



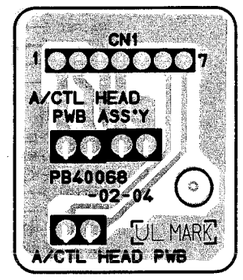
4.13 TERMINAL MAIN SCHEMATIC DIAGRAM



4.14 MAIN AND A/C HEAD CIRCUIT BOARDS



— A/C HEAD —



COMPONENT PARTS LOCATION GUIDE <MAIN>

CAPACITOR

REF.NO.	LOCATION
C1	B C 10F
C2	B C 10F
C3	B B 8G
C4	B B 8F
C5	B B 8G
C6	A B 7H
C7	B B 9G
C8	B B 9G
C9	B A 10F
C10	A B 9G
C11	A A 10G
C12	A B 10H
C13	A B 10H
C14	B B 9H
C15	B A 9H
C16	B A 10H
C17	B A 9I
C18	A B 9H
C19	B B 10I
C20	B B 10I
C21	A A 7H
C22	B A 7H
C23	B A 6I
C24	A B 6G
C25	B A 6G
C26	B A 6G
C27	A B 10H
C28	B A 6F
C29	B A 7G
C30	B A 6F
C31	A B 7G
C32	B A 6F
C33	A B 7I
C34	B A 7G
C35	B B 7G
C36	B B 7F
C37	B A 7G
C38	B B 8F
C39	B B 8F
C40	B B 6H
C41	B B 6E
C42	B B 7E
C43	A B 7E
C44	A B 6E
C45	A B 6E
C46	A A 6I
C47	A A 7F
C48	B B 8F
C49	B B 7J
C50	B B 9E
C52	B B 10I
C53	B A 9G
C54	A A 8E
C55	A B 8G
C56	A B 7I
C57	B B 8F
C58	B B 7H
C59	B B 7I
C60	B B 9F
C61	B B 9H
C62	B B 16I
C63	B B 6E
C64	B B 6E
C65	B B 7E
C66	B B 7E
C67	B B 6D
C68	B B 7J
C70	B B 7I
C75	B B 6G
C76	B B 6H
C78	B B 7G
C79	B B 6G
C80	B B 10E
C101	B B 12I
C102	B B 16C
C103	B B A 14J
C104	A B 16J
C105	A B 13J
C106	B B 13J
C107	B B 13J
C108	B B 13J
C109	B A B 12J
C110	B B B 13J
C111	B B B 13K
C112	B B B 13K
C113	B B B 13J
C114	B B B 14J
C115	B B B 14K
C116	B B B 14K
C117	B B B 14J
C118	B B B 13K
C119	B B A 14K
C120	B A B 14J
C121	B B B 15I
C122	B B B 13J
C123	B B B 13J
C124	B B B 13J
C125	B B B 14J
C126	B B B 14J
C127	B B B 13J
C128	B B B 14J
C132	B B B 16I
C251	B B B 10D
C252	B B B 10D
C254	B A B 9D
C255	B B A 9D
C256	A B B A 10E
C257	B A B B 9E
C258	B A B B 9D
C259	B B B B 9F
C260	B B B B 9D
C261	B B B B 9F
C262	B B B B 8D
C263	B B B B 8D
C264	B B A B 8C
C265	B B B B 8C
C266	B A A B 9C
C267	B A B B 9D
C268	B B B B 9D
C269	B B B B 9D
C270	B B B B 6I
C271	B B B B B 10G
C272	B B B B B 7F
C290	B A B B B 10D
C291	B A B B B 9D
C292	B A B B B 10C
C294	B A B B B 7C
C296	B A B B B 8D
C297	B A B B B 6H
C298	B A B B B 6D
C299	B A B B B 7D
C301	B A A A A 9J
C302	B A A A A 8K
C303	B A A A A 8K
C304	B A A A A 8K
C305	B A B A A 9J
C306	B A B A A 8J
C307	B A B A A 9J
C308	B A A A A 8J
C309	B A B A A 9J
C310	A D 8I
C311	B C B 8J
C312	B A B 8J
C313	B C B 8J
C314	B A B 8J
C315	B C B 8J
C316	B C B 7J
C317	A D B 6M
C318	B C B 9I
C319	B C B 8J
C331	B C B 6M
C332	B C B 7M
C333	B C B 8M
C334	B C B 7L
C335	B A B 7L
C341	A A D D 20B
C342	A A D D 20B
C343	A A D D 20B
C344	A A D D 21C
C351	A A D D 8J
C352	A A D D 13O
C401	A A D D 15N
C402	A A D D 15N
C403	A A D D 15N
C404	A A D D 15M
C405	A A D D 16M
C406	A A D D 15M
C407	A B D D 16M
C408	A A D D 16M
C409	A A D D 16M
C410	A B D D 16M
C411	A B D D 17M
C412	A B B C 17M
C413	A B B C 17M
C414	A B B C 17M
C415	A B B C 18M
C416	A B B C 18N
C417	A B B C 18N
C418	A B D D 18N
C419	A B D D 18N
C420	A B D D 18N
C421	A A D D 18O
C422	A A D D 17O
C423	A A D D 17O
C424	A A D D 17O
C425	A A D D 17O
C426	A A D D 16O
C427	A A D D 16O
C428	A A D D 16O
C429	A A D D 16O
C430	A A D D 16N
C431	A A D D 15O
C432	A A D D 15N
C433	A A D D 16N
C434	A A B D 18O
C435	A A B D 17N
C436	A B C D 17O
C441	A B C D 18N
C501	A B B C 17J
C502	A B B C 16J
C503	A B B C 16J
C504	A B B C 15J
C505	A B B C 16J
C506	A B B C 16K
C507	A B B C 15K
C508	A B B C 15K
C509	A B B C 16K
C510	A B B C 16K
C511	A B B C 16K
C512	A B B C 16K
C513	A B B C 17J
C701	A B A D 13D
C702	A B A D 13D
C703	A B A D 14C
C704	A B A D 13B
C705	A B A D 16C
C706	A B B C 15F
C707	A B B C 15F
C709	A B B C 15F
C710	A B B C 15F
C711	A B B C 15F
C712	A B B C 14E
C713	A B B C 13C
C714	A A D D 18C
C715	A A D D 19B
C716	A A D D 18C
C717	A A D D 3B
C718	A A D D 3A
C719	A A D D 3B
C720	A B B C 18G
C721	A B B C 17G
C722	A B B A 4E
C723	A B A D 19D
C724	A B B C 15A
C725	A B B C 8B
C729	A B B C 17F
C730	A B A D 7N
C731	A B B C 7O
C732	A B B C 2B
C733	A B B C 2B
C734	A B B C 17D
C735	A B B C 17D
C736	A B B A 6N
C737	A B B C 1B
C738	A B B C 11I
C740	A B A D 18F
C741	A B A D 4B
C744	A B B C 7O
C748	A B B C 2A
C749	A B B C 2B
C750	A B B C 1B
C752	A B B C 18H
C753	A B B C 18H
C851	A B B C 20F
C852	A B B C 20F
C853	A B B C 21G
C854	A B B C 20H
C855	A B B C 20H
C856	A B A D 19H
C857	A B B C 19H
C858	A B B C 19G
C859	A B B C 20E
C860	A B B C 20E
C861	A B B C 20F
C862	A B B C 20F
C863	A B A D 7O
C864	A B A D 7O
C865	A B A D 8O
C901	A A D D 2P
C903	A A D D 2O
C906	A A D D 3M
C907	A A D D 3K
C908	A A D D 2K
C910	A A D D 2M
C911	A A B D 2K
C912	A B A D 2L
C915	A B A D 3L
C916	A B A D 3L
C917	A A D D 3L
C951	A A D D 1H
C953	A A D D 2H
C954	A A D D 3H
C955	A A D D 4G
C959	A D 4G
C960	A D 1H
C961	A C D 1G
C962	A C D 2E
C963	A D D 2D
C964	A D D 1D
C965	A D D 1E
C966	A D D 3D
C967	A D D 4D
C968	A D D 14O
C969	A D D 4J
C970	A D D 14O
C971	A D D 2G
C972	A D D 2G
C1001	A B C D 19O
C1002	A B C D 20L
C1003	A B C D 19M
C1004	A B C D 20K
C1005	A B C D 21O
C1006	A B C D 21J
C1007	A B C D 13O
C1008	A B C D 20K
C1009	A B C D 20J
C1011	A B C D 20O
C1012	A B C D 20O
C1013	A B C D 20O
C1014	A B C D 21G
C1031	A B C D 21L
C1032	A B C D 21L
C1033	A B C D 20P
C1034	A B C D 19O
C1035	A B C D 22P
C1051	A B C D 21M
C1052	A B C D 21M
C1053	A B C D 22L
C1054	A B C D 20P
C1055	A B C D 20O
C1057	A B C D 19M
C1058	A B C D 19M
C1059	A B C D 21O
C1101	A B B C 8L
C1102	A B B C 9M
C1103	A B B C 9M
C1104	A B B C 9M
C1105	A B B C 8M
C1106	A B B C 9M
C1107	A B B C 10L
C1108	A B B C 10L
C1109	A B B C 10J
C1110	A B B C 9M
C1111	A B B C 9K
C1112	A A D D 9K
C1113	A A D D 9L
C1114	A A D D 9L
C1115	A A D D 8L
C1116	A A D D 9L
C1141	A A D D 10J
C1142	A B B C 10J
C1143	A B B C 9K
C1144	A B B C 10K
C1145	A B B C 10K
C1146	A B B C 10K
C1431	A B C D 10O
C1432	A B C D 11O
C1433	A B C D 11O
C1434	A A D D 12O
C1435	A B C D 11O
C1436	A B C D 12O
C1437	A B C D 20P

CONNECTOR

REF.NO.	LOCATION
CN1	A D 14K
CN301	A D 7L
CN302	A D 20C
CN351	A D 12M
CN701	A D 10J
CN702	A D 6B
CN703	A D 6L
CN705	A D 2B
CN602	A D 2A
CN851	A D 7M
CN854	A D 2C
CN901	A D 7O
CN1102	A D 10M
CN1404	A D 17P
CN1405	A D 12P
CN1406	A D 9P
CN1407	A D 20A
CN3051	A D 10N

CIRCUIT PROTECTOR

REF.NO.	LOCATION
CP701	A D 6O
CP851	A D 6O
CP901	A D 2F
CP902	A D 3F
CP1101	A D 11L

DIODE

REF.NO.	LOCATION
D1	A D 6G
D3	A D 10F
D5	A D 16H
D6	A D 8E
D8	A D 10H
D10	A D 8E
D12	A D 8E
D101	A D 13L
D102	A D 13L
D254	A D 10F
D255	A D 7E
D301	A D 6J
D401	A D 18M
D402	A D 17O
D701	A D 12B
D702	A D 3C
D703	A D 12C
D704	A D 12D
D705	A D 12E
D706	A D 12E
D708	A D 13F
D709	A D 13C
D710	A D 11E
D711	A D 13G
D712	A D 1B
D713	A D 2B
D714	A D 12G
D715	A D 12G
D901	A D 2N
D908	A D 3M
D909	A D 3L
D910	A D 3L
D911	A D 3K
D951	A D 4I
D952	A D 3I
D953	A D 3I
D954	A D 2I
D955	A D 3H
D956	A D 4J
D957	A D 1F
D958	A D 1G
D960	A D 1F
D962	A D 2E
D963	A D 2E
D964	A D 3G
D965	A D 4I
D968	A D 1I
D969	A D 1I
D971	A D 14O
D972	A D 3H
D973	A D 2H
D1001	A D 19O
D1002	A D 19M
D1004	A D 21O
D1005	A D 21O

IC

REF.NO.	LOCATION
IC1	B C 8H
IC2	B C 8E
IC101	A D 13K
IC251	A D 10D
IC253	B C 7D
IC401	B C 17N
IC501	A D 17K
IC701	B C 15D
IC702	A D 19B
IC703	B C 13C
IC704	A D 7O
IC705	B C 17F
IC851	B C 19G
IC852	A D 8O
IC853	B C 6P
IC1001	A D 22L
IC1101	A D 10L

COIL

REF.NO.	LOCATION
L1	A D 9F
L2	A D 10G
L3	A D 9H
L4	A D 6H
L5	A D 8E
L6	A D 6D
L7	A D 9G
L8	A D 10E
L9	A D 7J
L10	A D 7E
L11	A D 9F
L12	A D 9E
L13	A D 7I
L15	A D 6F
L16	A D 6G
L17	A D 7J
L101	A D 16I
L102	A D 12I
L253	A D 10C
L254	A D 9C
L256	A D 9E
L258	A D 6H
L259	A D 9F
L301	A D 7K
L401	A D 18O
L501	A D 15J
L502	A D 17J
L701	A D 13F
L702	A D 14F
L703	A D 6O
L951	A D 2G
L953	A D 3H
L954	A D 2E
L1001	A D 21L
L1002	A D 21L
L1003	A D 19O
L1004	A D 22P
L1081	A D 21L
L1101	A D 10L
L1141	A D 10K
L1431	A D 10O
L1432	A D 11O

TRANSISTOR

REF.NO.	LOCATION
Q1	B C 10F
Q2	B C 9F
Q3	B C 10E
Q4	B C 10H
Q6	B C 7J
Q7	B C 7I
Q8	B C 10E
Q9	B C 6F
Q14	B C 7E
Q15	B C 9F
Q16	B C 6G
Q17	B C 5G
Q19	B C 8J
Q20	B C 13H
Q21	B C 10H
Q22	B C 8D
Q23	B C 7D
Q24	B C 10H
Q25	B C 10H
Q101	B C 14J
Q102	B C 14I
Q103	B C 15I
Q251	B C 10D
Q252	B C 6H
Q253	B C 6H
Q254	B C 10E
Q255	B C 5H
Q256	B C 10D
Q257	B C 9E
Q258	B C 10F
Q259	B C 9F
Q260	B C 7F
Q261	B C 6F
Q262	B C 7F
Q263	B C 9C
Q264	B C 7C
Q265	B C 6D
Q266	B C 7D
Q267	B C 10C
Q301	B C 7J
Q302	B C 7J
Q303	B C 7J
Q304	B C 6M
Q305	B C 6M
Q306	B C 6L
Q307	B C 6L
Q308	B C 6N
Q309	B C 7M
Q310	B C 7M
Q311	B C 7M
Q312	B C 19E
Q313	B C 21B
Q314	B C 8K
Q351	B C 9J
Q352	B C 13N
Q353	B C 12N
Q401	B C 19P
Q402	B C 19P
Q403	B C 19O
Q404	B C 15O
Q405	B C 15O
Q501	B C 17J
Q502	B C 17J
Q503	B C 15J
Q701	B C 13B
Q702	B C 13E
Q703	B C 15F
Q704	A C 4E
Q705	B C 18E
Q706	B C 16C
Q707	B C 17I
Q711	B C 14F
Q851	B C 18E
Q856	B C 19E
Q857	B C 19E
Q858	B C 20H
Q859	B C 20H
Q901	B C 2L
Q902	A C 2M
Q951	B C 2E
Q952	B A 2F
Q953	B C 3D
Q954	B A 3D
Q955	B C 1E
Q956	B A 3G
Q957	B C 3F
Q958	A D 4I
Q959	A D 14O
Q960	A D 10N
Q962	B C 4D
Q1001	B C 21L
Q1002	A A 19N
Q1003	A B 19N
Q1004	B C 20O
Q1005	B C 22O
Q1006	B C 19J
Q1007	B C 21N
Q1008	B C 21M
Q1009	B C 20N
Q1011	B C 20O
Q1012	B C 20N
Q1013	B C 20M
Q1014	B C 20N
Q1015	B C 20N
Q1016	B C 21M
Q1017	B C 20P
Q1101	B C 8M
Q1141	B C 10K
Q1431	B C 12O
Q1432	B C 11O

RESISTOR

REF.NO.	LOCATION
R1	B C 8E
R2	B C 8F
R3	B C 8D
R4	B C 8F
R5	B C 9H
R6	B C 9H
R7	B C 10F
R8	B C 10F
R9	B C 9H
R10	B C 6F
R11	B C 6F
R12	B C 7F
R13	B C 7F
R14	B C 8F
R15	B C 8G
R16	B C 8F
R17	B C 9I
R18	B C 10G
R20	B C 10G
R21	B C 6F
R22	B C 5F
R23	B C 10G
R24	B C 12D
R25	B C 10F
R27	B C 6E
R28	B C 7G
R29	B C 6G
R30	B C 10E
R31	B C 6I
R32	B C 6I
R33	B C 5G
R34	B C 9E
R35	B C 6G
R36	B C 9F
R37	B C 9F
R39	B C 8F
R41	B C 7E
R43	B C 8F
R44	B C 8F
R45	B C 9G
R46	B C 10H
R47	B C 10G
R48	B C 10H
R49	B C 10H
R50	B C 15G
R51	B C 10H
R52	B C 15G
R53	B C 16H
R54	B C 8D
R55	B C 7D
R56	B C 7D
R57	B C 6H
R58	B C 6H
R59	B C 5H
R64	B C 15I
R65	B C 6E
R66	B C 7E
R67	B C 8F
R69	B C 10H
R101	B C 13J
R102	B C 13J
R103	B C 14J
R104	B C 13J
R105	B C 13K
R106	B C 14K
R107	B C 14J
R111	B C 12J
R221	B C 15P
R222	A D 15P
R251	B C 10D
R252	B C 10D
R253	B C 9D
R254	B C 9E
R255	B C 8D
R256	B C 9D
R257	B C 8D
R258	B C 8D
R259	B C 9D
R260	B C 10C
R261	B C 9C
R262	B C 9D
R263	B C 10C
R264	B C 10C
R265	B C 10D
R266	B C 9E
R267	B C 9F
R269	B C 8D
R270	B C 6I
R271	B C 6H
R272	B C 6I
R273	B C 10C
R277	B C 6E
R280	B C 9G
R281	B C 10F
R282	B C 9G
R283	B C 11E
R284	B C 9F
R285	B C 7F
R286	B C 7F
R287	B C 7F
R288	B C 6F
R289	B C 6F
R290	B C 10C
R291	B C 10D
R292	B C 8D
R293	B C 8C
R294	B C 7F
R295	B C 5H
R296	B C 6C
R297	B C 7C
R298	B C 7C
R299	B C 6D
R301	B C 9J
R302	B C 8K
R303	B C 9I
R304	B C 8K
R305	B C 9J
R306	B C 9J
R307	B C 9J
R308	B C 9I
R310	B C 6J
R311	B C 8I
R312	B C 7J
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R314	B C 7J
R315	B C 6M
R316	B C 6M
R317	B C 6L
R318	B C 6L
R319	B C 9K
R320	B C 8I
R321	B C 8J
R322	B C 8J
R323	B C 7J
R331	B C 7M
R332	B C 6M
R333	B C 7M
R334	B C 7M
R335	B C 7M
R336	B C 7M
R337	B C 7M
R338	B C 7L
R339	B C 7L
R340	B C 7L
R341	B C 21B
R342	A D 20B
R343	A D 20B
R351	B C 9I
R352	B C 13O
R353	B C 13N
R354	B C 12N
R355	B C 12N
R401	B C 17M
R402	B C 17M
R403	B C 15N
R404	B C 15N
R405	B C 15M
R406	B C 15M
R407	B C 15M
R408	B C 15M
R409	B C 15M
R410	B C 15M
R411	B C 15M
R412	B C 16M
R413	B C 16M
R414	B C 17M
R415	B C 18N
R416	B C 17O
R417	B C 17O
R418	B C 17O
R419	B C 17O
R420	B C 17O
R421	B C 17O
R422	B C 18O
R423	B C 17O
R424	B C 17P
R425	B C 17P
R426	B C 16O
R427	B C 16O
R428	B C 16P
R429	B C 16O
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R431	B C 16N
R432	B C 15O
R433	B C 15N
R434	B C 15N
R435	B C 17M
R436	B C 15P
R437	B C 15P
R438	B C 15M
R441	B C 18N
R442	B C 18M
R443	B C 15O
R444	B C 15O
R501	B C 16J
R502	B C 16J
R503	B C 16J
R504	B C 16J
R505	B C 16J
R506	B C 15K
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R715	B C 15C
R716	B C 15C
R717	B C 15C
R718	B C 15C
R719	B C 16C
R720	B C 15C
R721	B C 13E
R722	B C 16E
R723	B A D 17D
R724	B C 16D
R725	B C 16E
R726	B C 16E
R727	B C 16E
R728	B C 16E
R729	B C 16E
R730	B C 16E
R731	B C 15C
R732	B C 6O
R733	B C 16F
R734	B C 14F
R735	B C 15F
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R739	B C 15F
R740	B C 15F
R741	B C 15F
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R743	B C 15G
R744	B C 16D
R745	B C 14F
R746	B C 14F
R747	B C 14F
R748	B C 14E
R749	B C 14E
R750	B C 16F
R751	B C 16F
R752	B C 17G
R753	B C 14F
R754	B C 13E
R755	A A 13E
R756	A A 13D
R757	A A 13E
R758	A A 13D
R759	B A 13E
R760	A A 16C
R761	A D 16C
R762	A D 19C
R763	A D 19C
R764	A D 17D
R765	B C 13E
R766	B C 12B
R767	B C 12C
R768	A C D 3A
R769	A C D 13B
R770	B A D 13B
R771	B C D 13B
R772	B C D 18G
R773	B C D 16C
R774	B C D 14C
R775	A C D 13C
R776	B C D 14C
R777	B C D 13C
R778	B C D 2B
R779	B C D 2A
R780	B C D 7A
R781	B C D 7A
R782	B C D 7A
R783	B C D 16E
R784	B C D 16E
R785	A C D 16B
R786	A C D 11D
R787	B C D 9B
R788	A C D 14B
R789	B C D 14B
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R793	B C D 13E
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R803	B C D 2B
R804	B C D 2B
R805	A C D 19C
R806	B C D 19C
R807	A C D 16D
R808	B C D 13E
R809	B C D 12G
R810	B C D 12G
R811	B C D 15A
R812	B C D 9B
R814	A C D 17C
R815	B C D 12C
R816	B C D 12C
R817	A C D 14F
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R819	B C D 15A
R820	B C D 9B
R821	B C D 16C
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R830	B C D 16F
R831	B C D 17G
R832	B C D 17G
R833	B C D 17F
R834	B C D 18H
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R843	B C D 21D
R844	B C D 20H
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R880	B C D C 19E
R881	B C D C 18G
R882	B C D C 18G
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R885	B C D C 20E
R886	B C D C 20E
R887	B C D C 20F
R888	B C D C 20F
R889	B C D C 20F
R890	B C D C 6P
R891	B C D C 6P
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R893	A B D C 20H
R894	B C D C 19H
R895	B C D C 20H
R896	A B D C 20H
R897	B C D C 18G
R901	B A D 3M
R902	B A D 3L
R903	B A D 3M
R904	A D 2K
R905	A D 2L
R906	B C 15E
R908	A D C 1K
R909	B C C 3L
R910	B C C 2K
R911	B C C 4J
R951	B C C 4J
R952	A D C 4I
R953	A D C 4J
R954	A D C 4F
R955	A D C 4F
R956	B C C 4D
R957	B C C 1G
R958	B C C 2E
R959	B C C 2E
R960	B C C 2E
R961	B C C 2D
R963	A D C 2D
R964	A D C 1D
R965	B C C 3D
R966	B C C 3D
R967	B C C 2G
R968	B C C 2F
R970	A B C C 1H
R971	A B C C 2E
R972	B C C C 1F
R973	B C C C 1F
R974	B C C C 1F
R975	B C C C 2E
R976	B C C C 14O
R977	A D C 1F
R978	B C C C 10M
R979	B C C C 11M
R1001	B C C C 19N
R1002	B C C C 19N
R1003	B C C C 19O
R1004	B C C C 19O
R1005	B C C C 20O
R1006	B C C C 21O
R1007	B C C C 21O
R1008	B C C C 22O
R1009	B C C C 22O
R1010	B C C C 22O
R1011	B C C C 20J
R1012	B C C C 21N
R1013	B C C C 21M
R1016	B C C C 21N
R1017	B C C C 20J
R1020	B C C C 19P
R1021	B C C C 20O
R1022	B C C C 20O
R1023	B C C C 20O
R1024	B C C C 20O
R1025	B C C C 19M
R1026	B C C C 22G
R1027	B C C C 21G
R1030	B C C C 22M
R1031	B A D D 22K
R1032	B A D D 22K
R1033	B A D D 22K
R1034	B A D D 22L
R1035	B A D D 22K
R1036	B A D D 22J
R1038	B C C C 19J
R1041	B C C C 20N
R1042	B C C C 20N
R1043	B C C C 20M
R1044	B C C C 20M
R1045	B C C C 20N
R1046	B C C C 20N
R1047	B C C C 21P
R1048	B C C C 19O
R1049	B C C C 19O
R1050	B C C C 21L
R1058	B C C C 21L
R1059	B C C C 21L
R1060	B C C C 20N
R1101	B C C C 8L
R1102	B C C C 8L
R1103	B C C C 8M
R1104	B C C C 9M
R1105	B C C C 9M
R1106	B C C C 9M
R1107	B C C C 9M
R1108	B C C C 9L
R1109	B C C C 9L
R1110	B C C C 10L
R1111	B C C C 10L
R1112	B C C C 11K
R1113	B C C C 11L
R1114	B C C C 12C
R1141	B C C C 9K
R1142	B C C C 10L
R1143	B C C C 10K
R1431	B C C C 12O
R1432	B C C C 12O
R1433	B C C C 12O
R1434	B C C C 11O
R1435	B C C C 11O
R1436	B C C C 10O
R1437	B C C C 11O
R1438	B C C C 16P
R1439	B C C C 12O

TEST POINT

REF.NO.	LOCATION
TP106	A D 11L
TP111	A D 13L
TP333	A D 7L
TP334	A D 20E
TP553	A D 15L
TP701	A D 12B
TP702	A D 13F
TP901	A D 2D
TP1101	A D 7K
TPGND	A D 3D

OTHERS

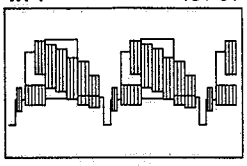
REF.NO.	LOCATION
CF701	A D 14D
CF851	A D 19G
F901	A D 1O
FL254	A D 7F
K901	A D 2K
LF901	A D 2P
LF902	A D 4P
PC901	A D 4L
PS701	A D 9B
PS702	A D 15B
T301	A D 7M
T302	A D 21C
T901	A D 2K
T1001	A D 21P
T1002	A D 20J
TU1001	A D 22C
UN1001	A D 21L
UN1501	A D 22C
X1	A D 9I
X2	A D 9I
X701	A D 14D
X1141	A D 10K

WAVEFORMS

MAIN

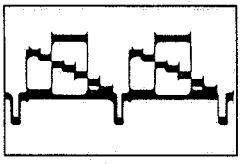
— VIDEO/N.AUDIO —

WF1 IC1-61



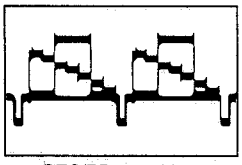
REC 0.81 Vp-p
20 mV/20 µsec/DIV

WF2 IC1-66



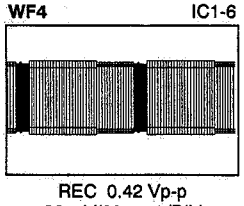
PB 0.57 Vp-p
20 mV/20 µsec/DIV

WF3 IC1-70



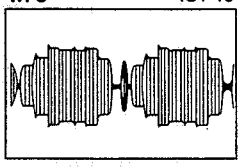
REC/PB 0.57 Vp-p
20 mV/20 µsec/DIV

WF4 IC1-6



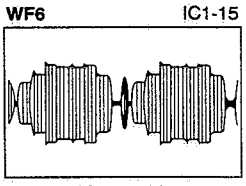
REC 0.42 Vp-p
20 mV/20 µsec/DIV

WF5 IC1-13



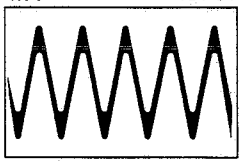
PB 0.6 Vp-p
20 mV/20 µsec.DIV

WF6 IC1-15



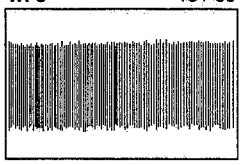
REC 0.42 Vp-p
20 mV/20 µsec/DIV

WF7 IC1-34



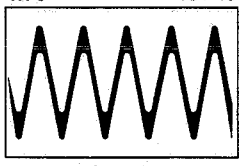
REC 2.1 Vp-p
1 V/50 msec/DIV

WF8 IC1-38



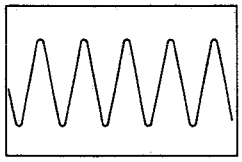
PB 0.04 Vp-p
5 mV/20 µsec/DIV

WF9 IC1-43



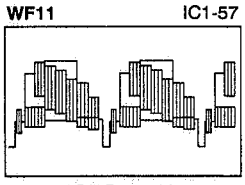
REC 0.3 Vp-p
10 mV/1 msec/DIV

WF10 IC1-46



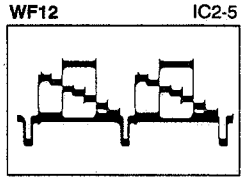
REC/PB 1.4 Vp-p
50 mV/2 msec/DIV

WF11 IC1-57



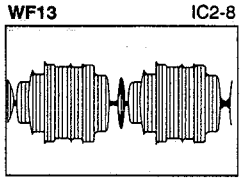
REC/PB 2.5 Vp-p
0.1 V/20 µsec/DIV

WF12 IC2-5



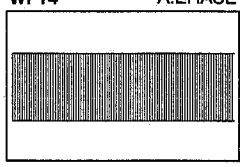
PB 0.46 Vp-p
20 mV/20 µsec/DIV

WF13 IC2-8



PB 0.38 Vp-p
20 mV/20 µsec/DIV

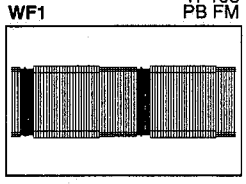
WF14 TP333 A.ERASE



REC 37.9 Vp-p
1 V/50 msec/DIV

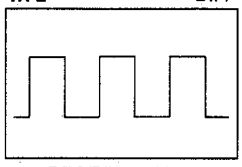
— PRE/REC —

WF1 TP106 PB FM



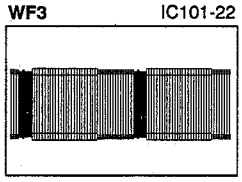
PB 0.38 Vp-p
20 mV/5 msec/DIV

WF2 TP111 D.FF



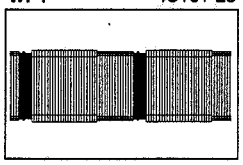
REC/PB 5.9 Vp-p
0.2 V/10 msec/DIV

WF3 IC101-22



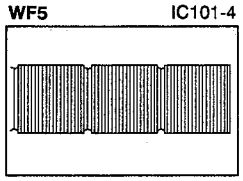
PB 0.41 Vp-p
20 mV/5 msec/DIV

WF4 IC101-28



REC 0.05 Vp-p
5 mV/5 msec/DIV

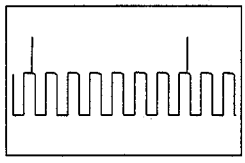
WF5 IC101-4



REC 2.7 Vp-p
50 mV/1 msec/DIV

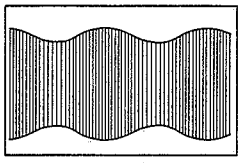
— SERVO —

WF1 IC1101-22 D.PG/FG



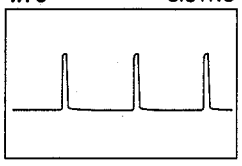
REC/PB 4.3 Vp-p
0.1 V/2 msec/DIV

WF2 IC1101-17 CAP.FG



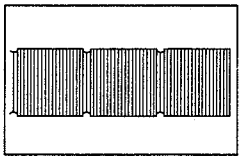
REC/PB 1.8 Vp-p
0.1 V/10 msec/DIV

WF3 IC1101-2 C.SYNC



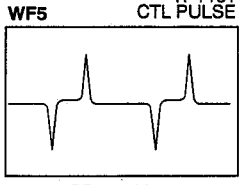
REC 5.1 Vp-p
0.1 V/20 µsec/DIV

WF4 IC1101-3 FSC



REC/PB 0.7 Vp-p
20 mV/5 msec/DIV

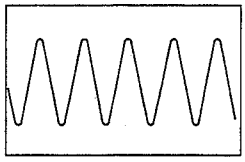
WF5 TP1101 CTL PULSE



PB 3.4 Vp-p
0.1 V/10 msec/DIV

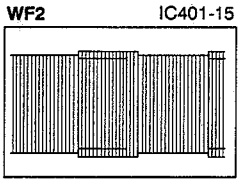
— FMA —

WF1 IC401-7



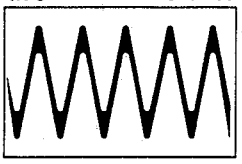
REC 0.3 Vp-p
0.1 mV/1 msec/DIV

WF2 IC401-15



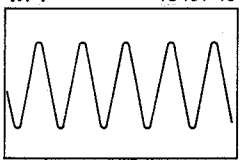
REC 0.3 Vp-p
10 mV/1 msec/DIV

WF3 IC401-38



REC 0.26 Vp-p
10 mV/1 msec/DIV

WF4 IC401-46

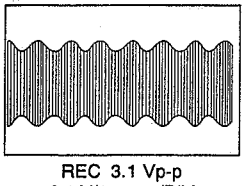


REC/PB 1.5 Vp-p
50 mV/1 msec/DIV

WF5 IC501-9

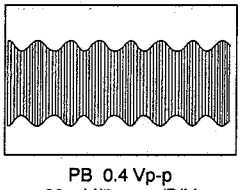
REC 0.3 Vp-p
20 mV/1 msec/DIV

WF6 IC501-16



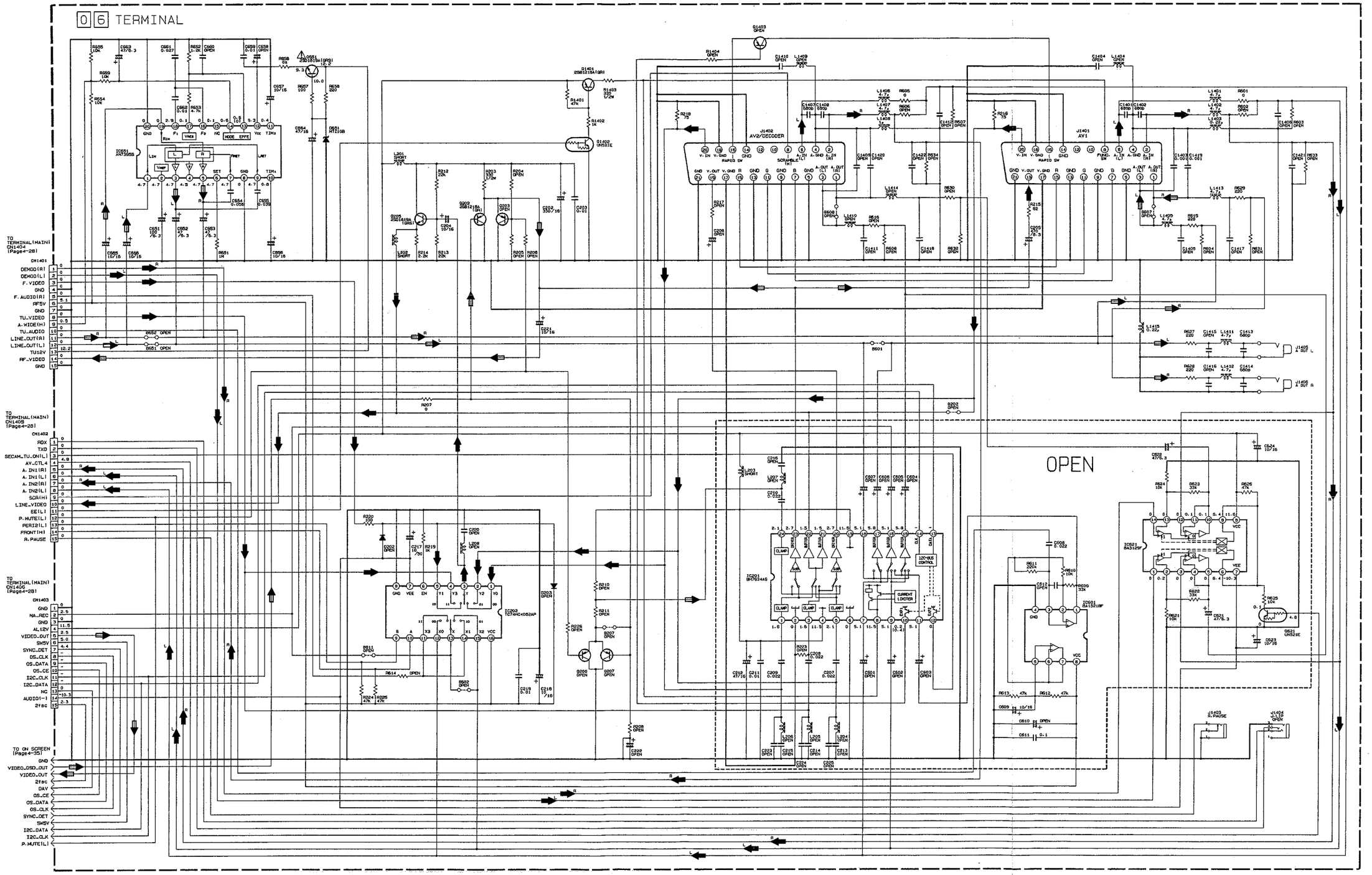
REC 3.1 Vp-p
0.1 V/1 msec/DIV

WF7 TP553 A.PB FM

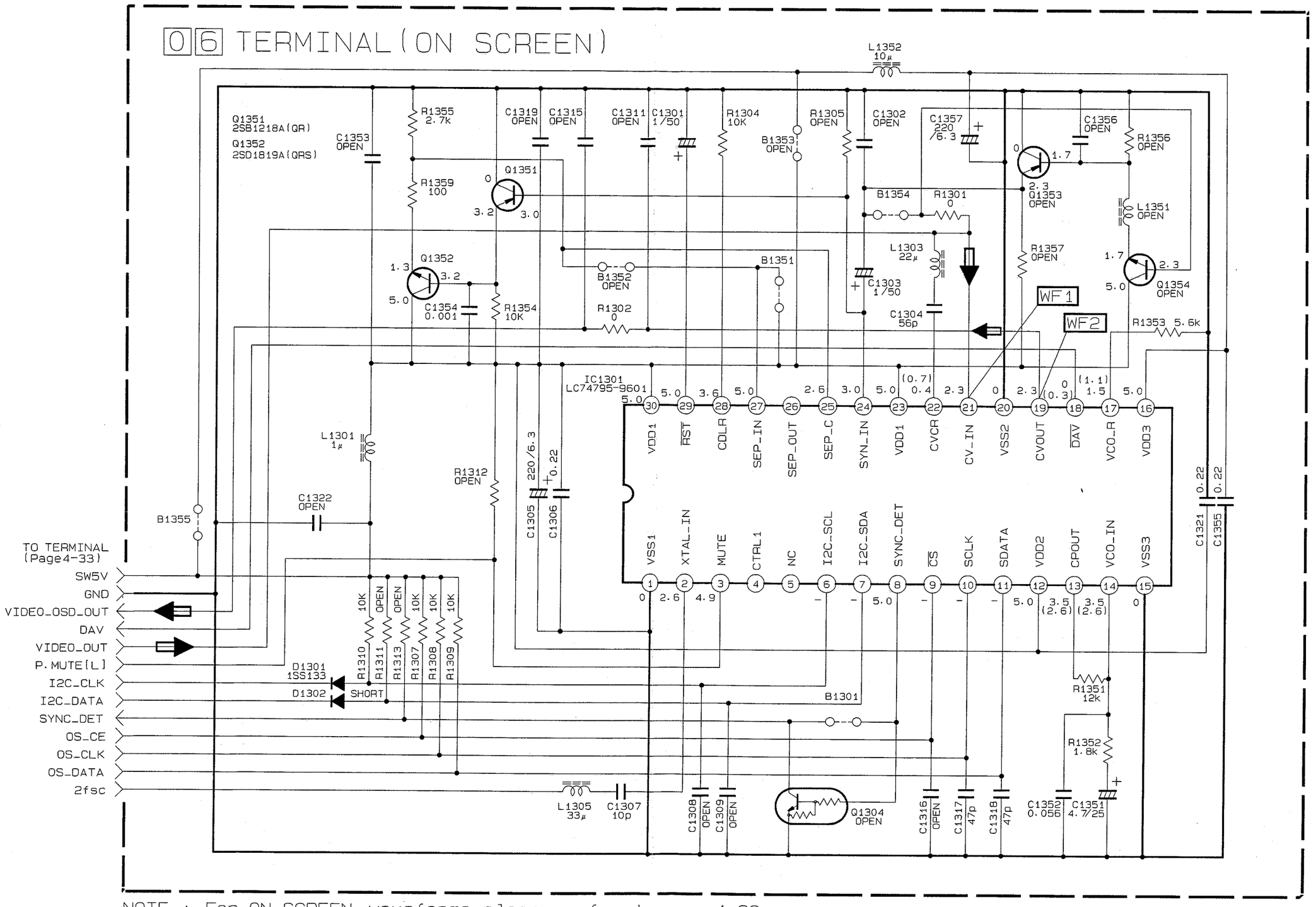


PB 0.4 Vp-p
20 mV/5 msec/DIV

4.15 TERMINAL SCHEMATIC DIAGRAM

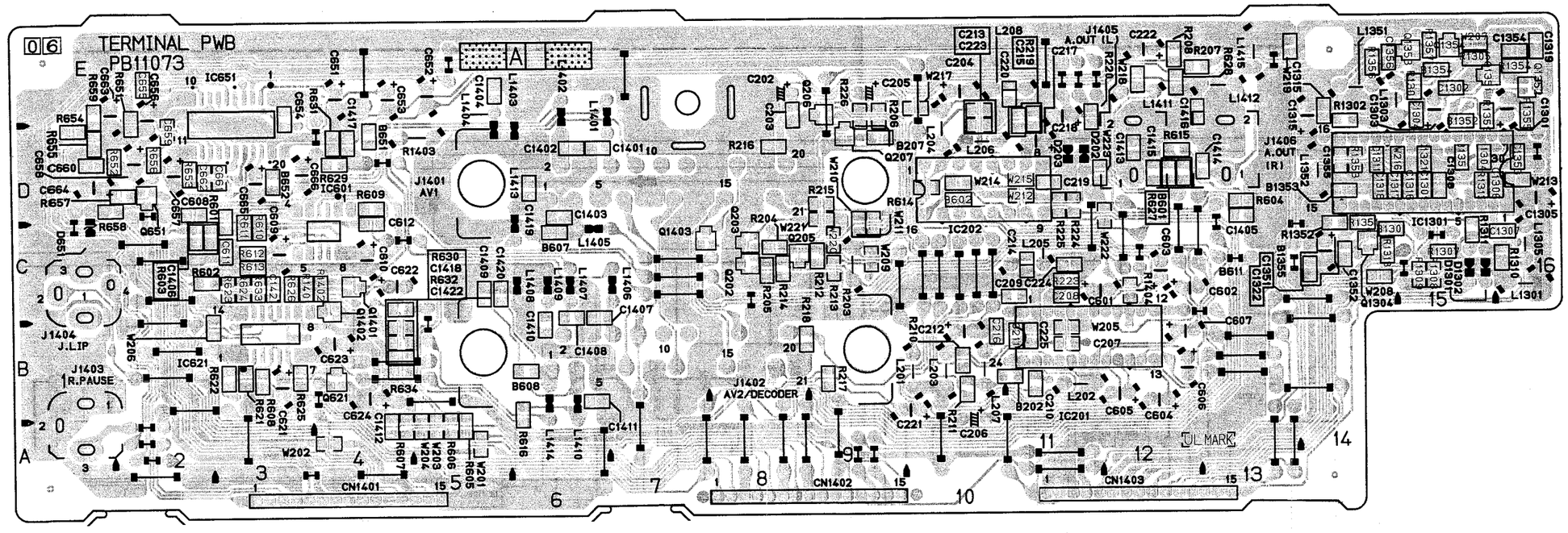


4.16 ON SCREEN SCHEMATIC DIAGRAM



NOTE : For ON SCREEN waveforms, please refer to page4-38.

4.17 TERMINAL CIRCUIT BOARD AND WAVEFORMS


06
TERMINAL PWB
PB11073
J1404
J.LIP
J1403
R.PAUSE
J1401
AV1
J1402
AV2/DECODER
J1405
A.OUT
J1406
A.OUT
IR1
CN1401
CN1402
CN1403
IC1301
IC202
IC621
IC651
IC601
IC201
Q1304
Q651
Q1403
Q1402
Q1401
Q1354
Q1353
Q1352
Q1351
Q1304
Q207
Q206
Q205
Q203
Q202
Q621
Q651
Q601
D1301
D1302
D651
D203
D202
L1415
L1414
L1413
L1412
L1411
L1410
L1409
L1408
L1407
L1406
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L1402
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L1301
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L1351
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L206
L207
L208
R1403
R1302
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R1402
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R1404
C1354
C1319
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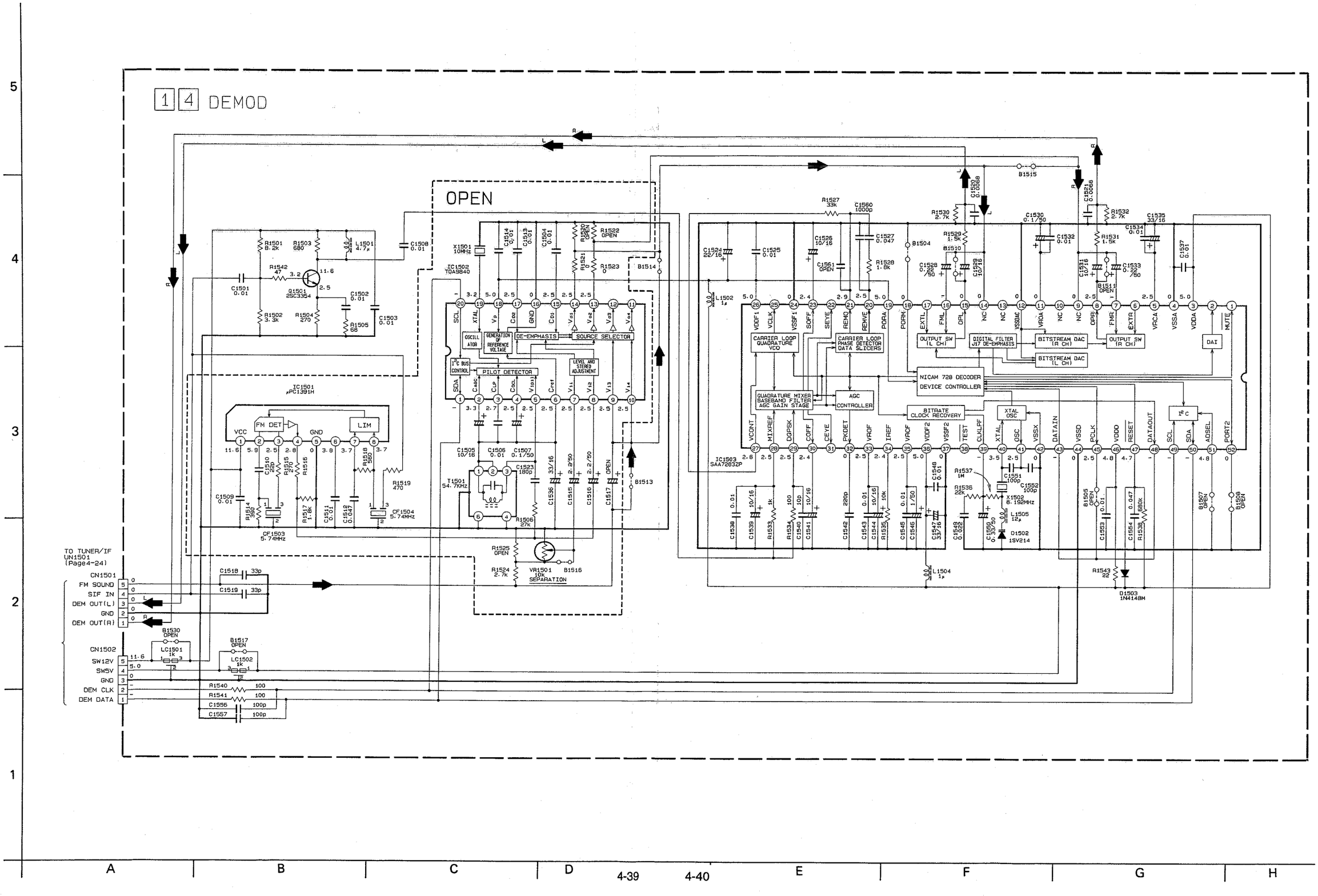
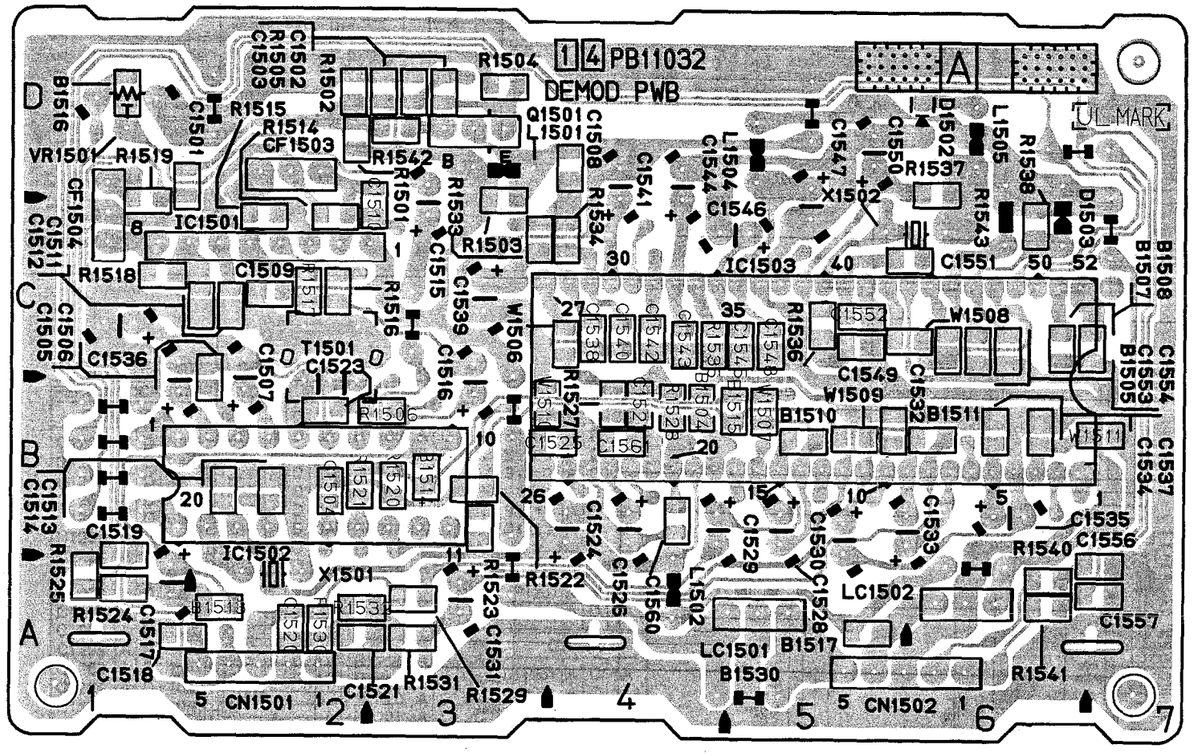
C1401

4.18 DEMODULATOR SCHEMATIC DIAGRAM



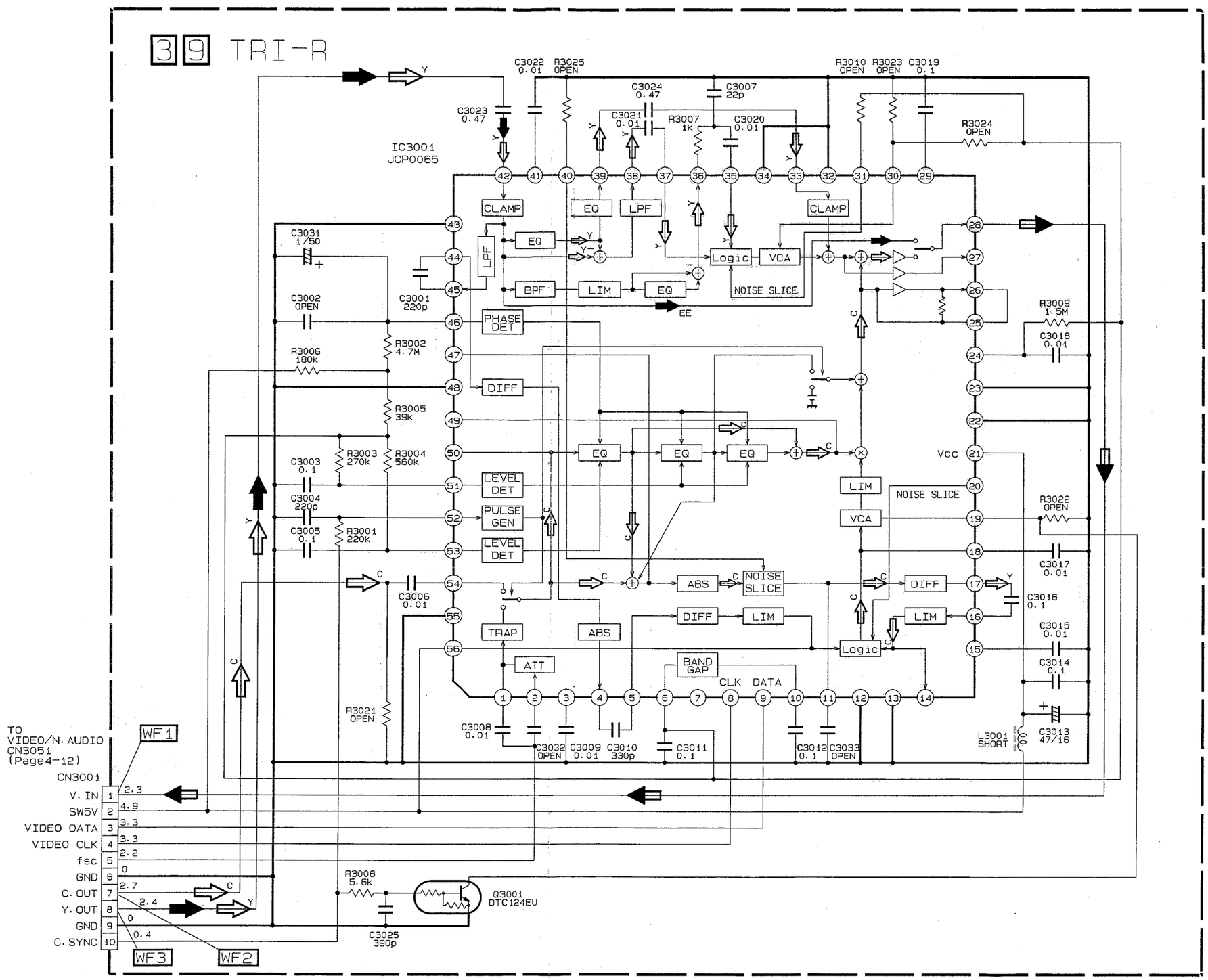
4.19 DEMODULATOR CIRCUIT BOARD



COMPONENT PARTS LOCATION GUIDE < DEMODULATOR >

REF.NO.	LOCATION		
CAPACITOR			
C1501	B	C	1D
C1502	B	C	3D
C1503	B	C	3D
C1504	B	C	2B
C1505	A	D	1B
C1506	B	C	2C
C1507	A	D	2B
C1508	B	C	4D
C1509	B	C	2C
C1510	B	C	3C
C1511	B	C	2C
C1512	B	C	2C
C1513	B	C	2B
C1514	B	C	2B
C1515	A	D	3C
C1516	A	D	3B
C1517	A	D	1A
C1518	B	C	1A
C1519	B	C	1B
C1520	B	C	2A
C1521	B	C	2A
C1523	B	C	2B
C1524	A	D	4B
C1525	B	C	4B
C1526	A	D	4B
C1527	B	C	4B
C1528	A	D	5B
C1529	A	D	4B
C1530	A	D	5B
C1531	A	D	3A
C1532	B	C	5B
C1533	A	D	6B
C1534	B	C	6B
C1535	A	D	6B
C1536	A	D	1C
C1537	B	C	6B
C1538	B	C	4C
C1539	A	D	3C
C1540	B	C	4C
C1541	A	D	4D
C1542	B	C	4C
C1543	B	C	4C
C1544	A	D	4D
C1545	B	C	5C
C1546	A	D	5C
C1547	A	D	5D
C1548	B	C	5C
C1549	B	C	5C
C1550	A	D	5D
C1551	B	C	6C
C1552	B	C	5C
C1553	B	C	6C
C1554	B	C	6C
C1556	B	C	7A
C1557	B	C	7A
C1560	B	C	4B
C1561	B	C	4B
CONNECTOR			
CN1501	A	D	2A
CN1502	A	D	6A
DIODE			
D1502	B	C	6D
D1503	A	D	6C
IC			
IC1501	A	D	3C
IC1502	A	D	1B
IC1503	A	D	6B
COIL			
L1501	A	D	3D
L1502	A	D	4A
L1504	A	D	5D
L1505	A	D	6D
TRANSISTOR			
Q1501	A	D	3D
RESISTOR			
R1501	B	C	2D
R1502	B	C	2D
R1503	B	C	3D
R1504	B	C	3D
R1505	B	C	3D
R1506	B	C	3B
R1514	B	C	2C
R1515	B	C	2C
R1516	B	C	2C
R1517	B	C	2C
R1518	B	C	1C
R1519	B	C	1C
R1520	B	C	3B
R1521	B	C	2B
R1522	B	C	3B
R1523	B	C	3B
R1524	B	C	1A
R1525	B	C	1A
R1527	B	C	4B
R1528	B	C	4B
R1529	B	C	3A
R1530	B	C	2A
R1531	B	C	3A
R1532	B	C	2A
R1533	B	C	3C
R1534	B	C	4C
R1535	B	C	4C
R1536	B	C	5C
R1537	B	C	6D
R1538	B	C	6C
R1540	B	C	6A
R1541	B	C	6A
R1542	B	C	3D
R1543	A	D	6C
OTHERS			
CF1503	A	D	2D
CF1504	A	D	1C
LC1501	A	D	5A
LC1502	A	D	6A
T1501	A	D	2B
VR1501	A	D	1D
X1501	A	D	2A
X1502	A	D	6C

4.22 TRI-R SCHEMATIC DIAGRAM



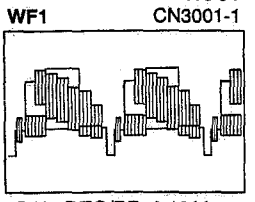
NOTE : For TRI-R waveform, please refer to page4-49.

4.23 TRI-R CIRCUIT BOARD AND WABEFORMS

WAVEFORMS

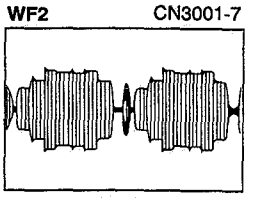
— TRI-R —

V.OUT
WF1 CN3001-1



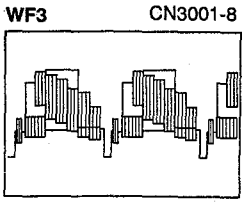
PAL REC/PB 2.18 Vp-p
0.1 V/20 µsec/DIV

C.IN
WF2 CN3001-7



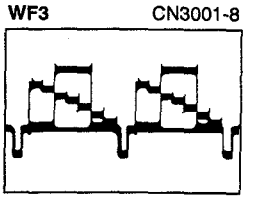
PAL PB 0.5 Vp-p
20 mV/20 µsec/DIV

Y.IN
WF3 CN3001-8

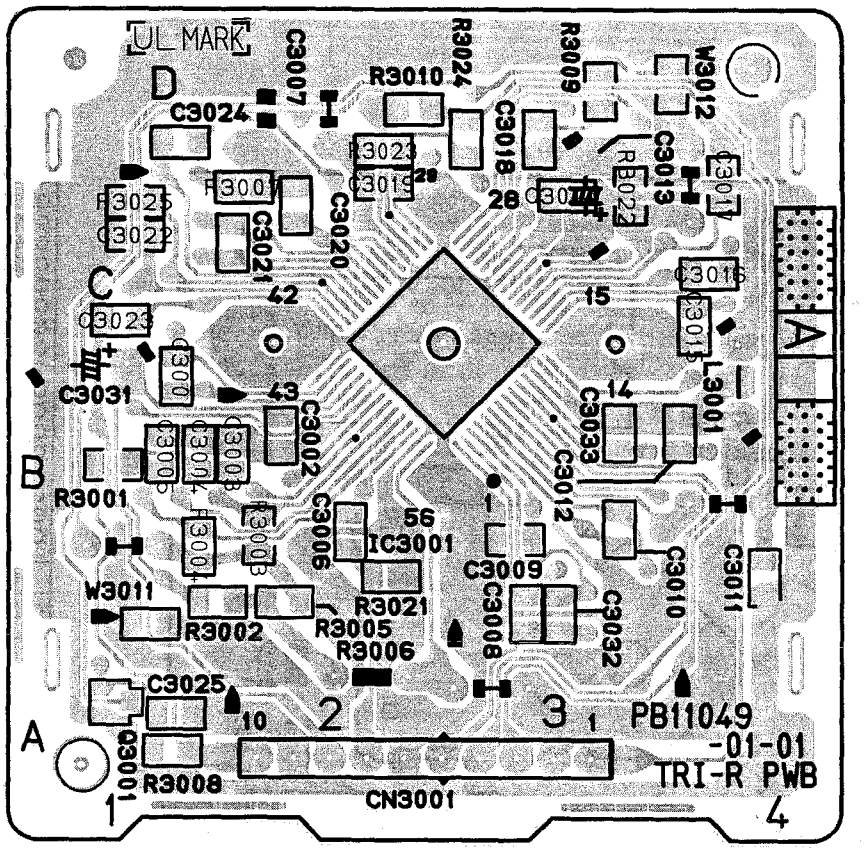


PAL REC 2.25 Vp-p
0.1 V/20 µsec/DIV

Y.IN
WF3 CN3001-8



PAL PB 2.25 Vp-p
0.1 V/20 µsec/DIV

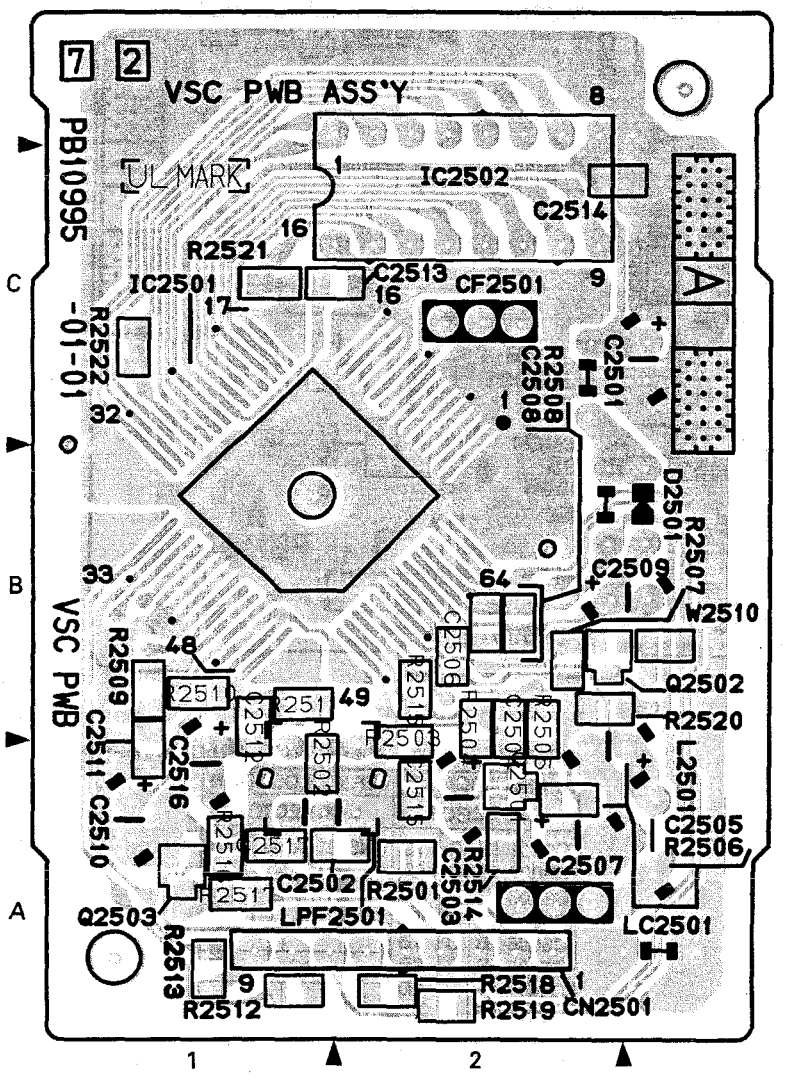


COMPONENT PARTS LOCATION GUIDE <TRI-R >

REF.NO.	LOCATION			REF.NO.	LOCATION		
CAPACITOR				CONNECTOR			
C3001	B	C	1C	CN3001	A	D	3A
C3002	B	C	2B				
C3003	B	C	2B	IC			
C3004	B	C	1B	IC3001	B	C	2C
C3005	B	C	1B				
C3006	B	C	2B	COIL			
C3007	A	D	2D	L3001	A	D	4B
C3008	B	C	3B				
C3009	B	C	3B	TRANSISTOR			
C3010	B	C	3B	Q3001	B	C	1A
C3011	B	C	4B				
C3012	B	C	4B	RESISTOR			
C3013	A	D	3C	R3001	B	C	1B
C3014	B	C	3C	R3002	B	C	1B
C3015	B	C	4C	R3003	B	C	2B
C3016	B	C	4C	R3004	B	C	1B
C3017	B	C	4C	R3005	B	C	2B
C3018	B	C	3D	R3006	A	D	2A
C3019	B	C	2C	R3007	B	C	2C
C3020	B	C	2C	R3008	B	C	1A
C3021	B	C	2C	R3009	B	C	3D
C3022	B	C	1C	R3010	B	C	2D
C3023	B	C	1C	R3021	B	C	2B
C3024	B	C	1D	R3022	B	C	3C
C3025	B	C	1A	R3023	B	C	2D
C3031	A	D	1C	R3024	B	C	3D
C3032	B	C	3B	R3025	B	C	1C
C3033	B	C	3B				

4.24 VSC CIRCUIT BOARD AND WAVEFORMS

— VSC —



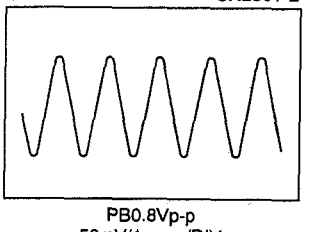
COMPONENT PARTS LOCATION GUIDE <VSC>

REF.NO.	LOCATION	REF.NO.	LOCATION
CAPACITOR		**TRANSISTOR**	
C2501	A D 3C	Q2501	B C 2A
C2502	B C 2A	Q2502	B C 2B
C2503	A D 2A	Q2503	B C 1A
C2504	B C 2B	**RESISTOR**	
C2505	A D 2A	R2501	B C 2A
C2506	B C 2B	R2502	B C 1A
C2507	A D 2A	R2503	B C 2B
C2508	B C 2B	R2504	B C 2B
C2509	A D 2B	R2505	B C 2B
C2510	A D 1A	R2506	B C 2A
C2511	B C 1A	R2507	B C 2B
C2512	B C 1B	R2508	B C 2B
C2513	B C 1C	R2509	B C 1B
C2514	B C 2C	R2510	B C 1B
C2515	B C 2A	R2511	B C 1B
C2516	A D 1A	R2512	B C 1A
C2517	B C 1A	R2513	B C 1A
CONNECTOR		R2514	B C 2A
CN2501	A D 2A	R2515	B C 2B
DIODE		R2516	B C 1A
D2501	A D 3B	R2517	B C 1A
IC		R2518	B C 2A
IC2501	B C 1B	R2519	B C 2A
IC2502	A D 1D	R2520	B C 2B
COIL		R2521	B C 1C
L2501	A D 3A	R2522	B C 1C
		OTHER	
		CF2501	A D 2C
		LC2501	A D 2A
		LPF2501	A D 2A

WAVEFORMS

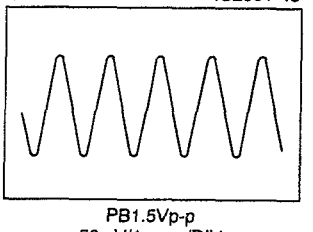
— VSC —

WF1 CN2501-2



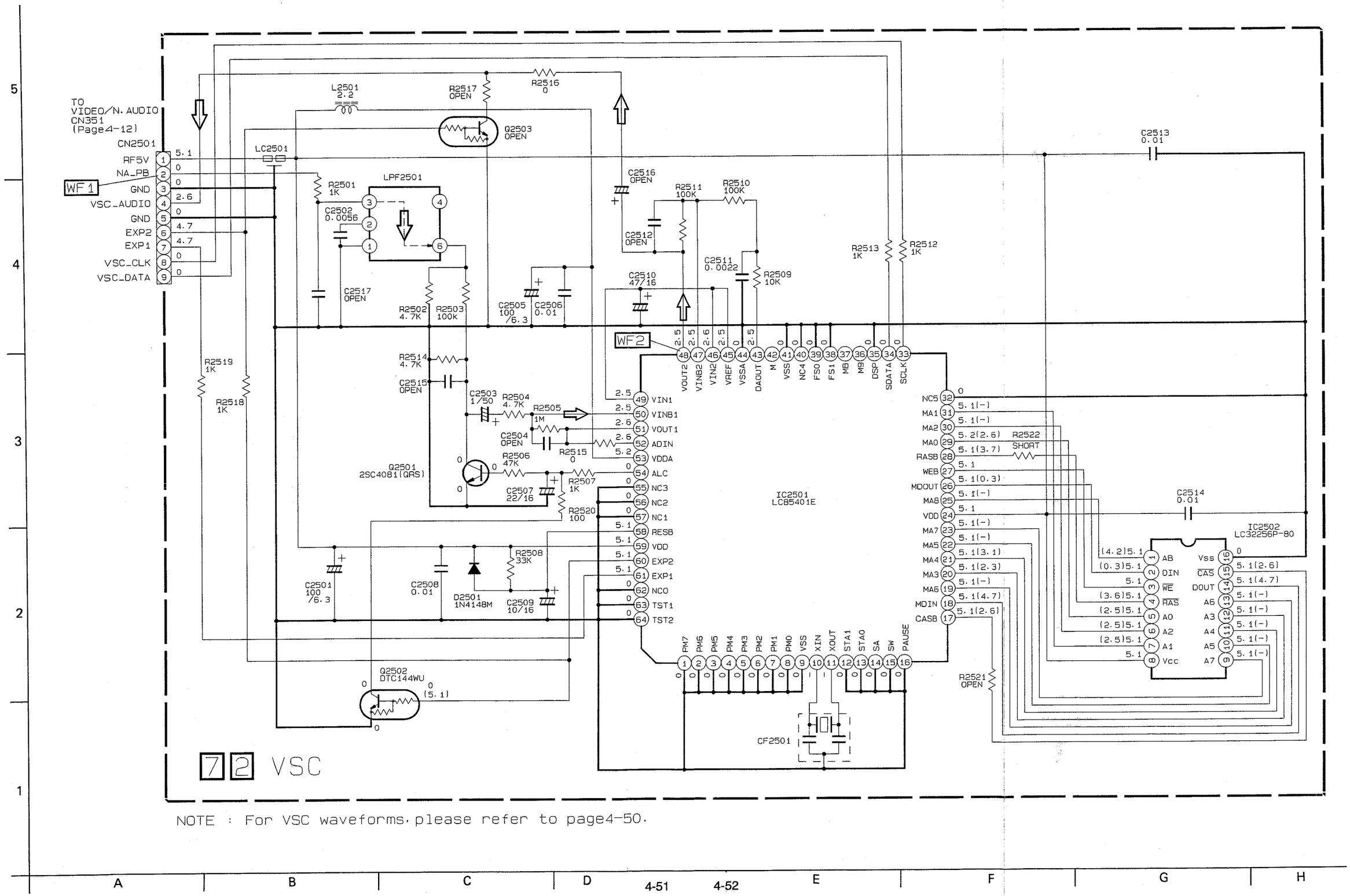
PB0.8Vp-p
50mV/1msec/DIV

WF2 IC2501-48



PB1.5Vp-p
50mV/1msec/DIV

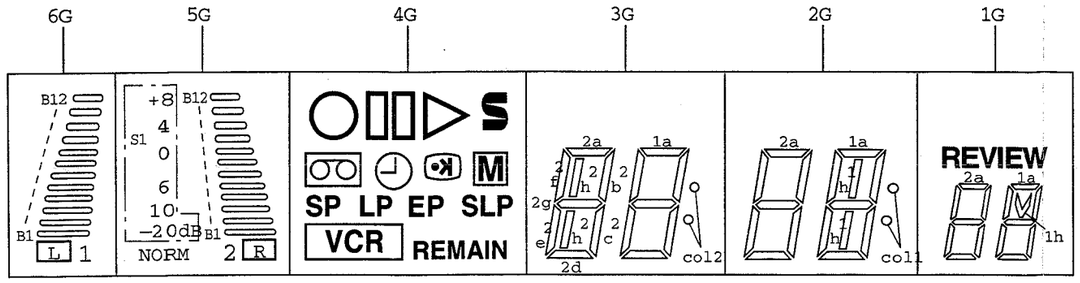
4.25 VSC SCHEMATIC DIAGRAM



NOTE : For VSC waveforms, please refer to page4-50.

4.26 FDP GRID ASSIGNMENT ANODE CONNECTION

GRID ASSIGNMENT



ANODE CONNECTION

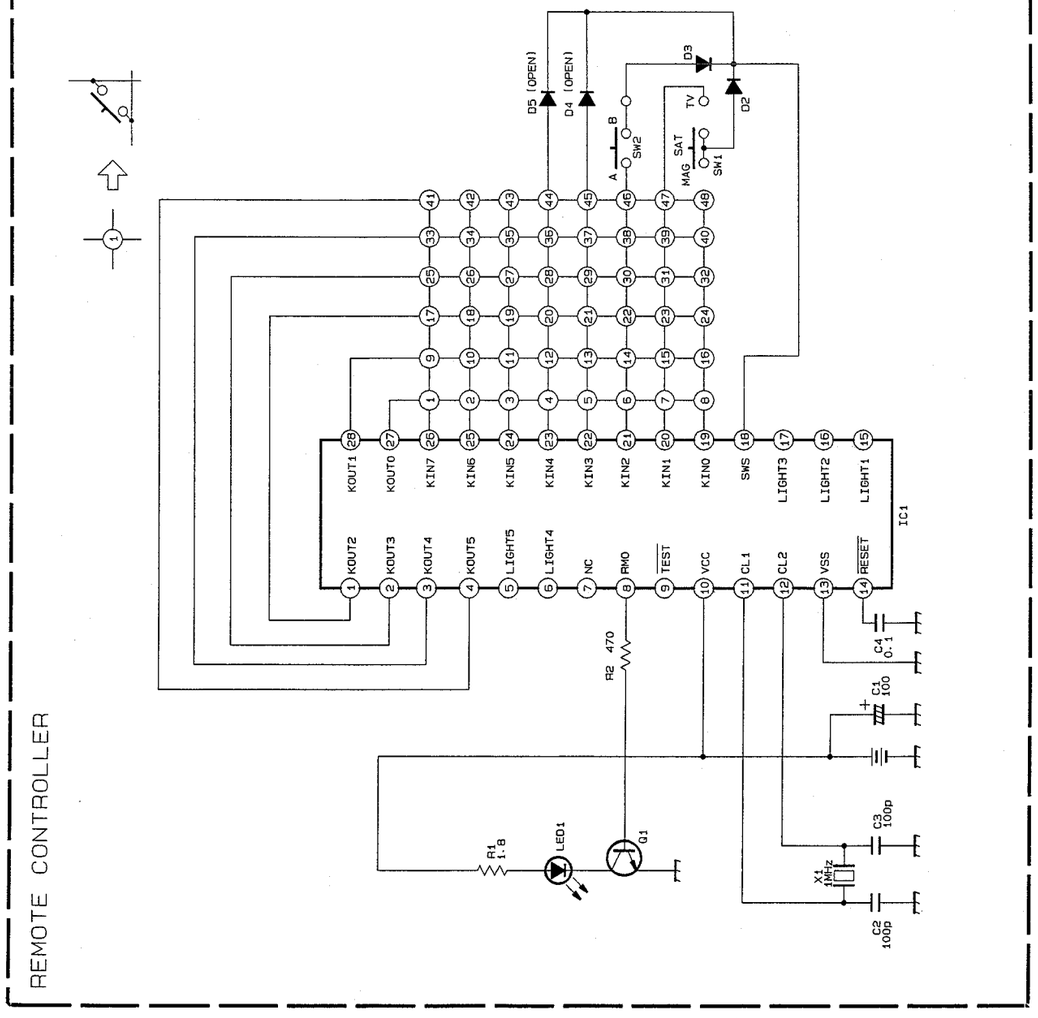
	6G	5G	4G	3G	2G	1G
P 1		S1	○	1a	1a	1a
P 2		NORM	▯▯	1b	1b	1b
P 3	1	2	▷	1f	1f	1f
P 4	L	R	🕒	1g	1g	1g
P 5	B12	B12	•K	1c	1c	1c
P 6	B11	B11	M	1e	1e	1e
P 7	B10	B10	⊙⊙	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	SP	2a	2a	2a
P10	B7	B7	LP	2b	2b	2b
P11	B6	B6	EP	2f	2f	2f
P12	B5	B5	SLP	2g	2g	2g
P13	B4	B4	REMAIN	2c	2c	2c
P14	B3	B3	S	2e	2e	2e
P15	B2	B2	—	2d	2d	2d
P16	B1	B1	—	2h	col1	REVIEW

4.27 REMOTE CONTROL SCHENATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

Key No.	Key Name
1	PUSH JOG >>
2	–
3	R.A.EDIT
4	SCENE FINDER
5	PRG CHECK
6	7
7	8
8	9
9	ILLUMI GUIDE
10	TV PROG +
11	CURSOR +/TV VOL +
12	PROG/MENU
13	OK
14	CANCEL
15	0
16	TIMER
17	OPERATE
18	–
19	AUDIO MONITOR
20	-/--
21	TV/VCR
22	RE.VIEW
23	CH SEARCH
24	CH STORE
25	STOP –
26	DATE +
27	DATE –
28	START –
29	TV PROG –
30	C.MEMORY
31	DISPLAY
32	SPATIALIZER
33	START +
34	PUSH JOG >>
35	PLAY
36	REW
37	FF
38	1
39	2
40	3
41	CURSOR –/TV VOL –
42	STOP +
43	STOP
44	REC
45	PAUSE
46	4
47	5
48	6
44+35	REC START
44+45	REC PAUSE

PEAC0505

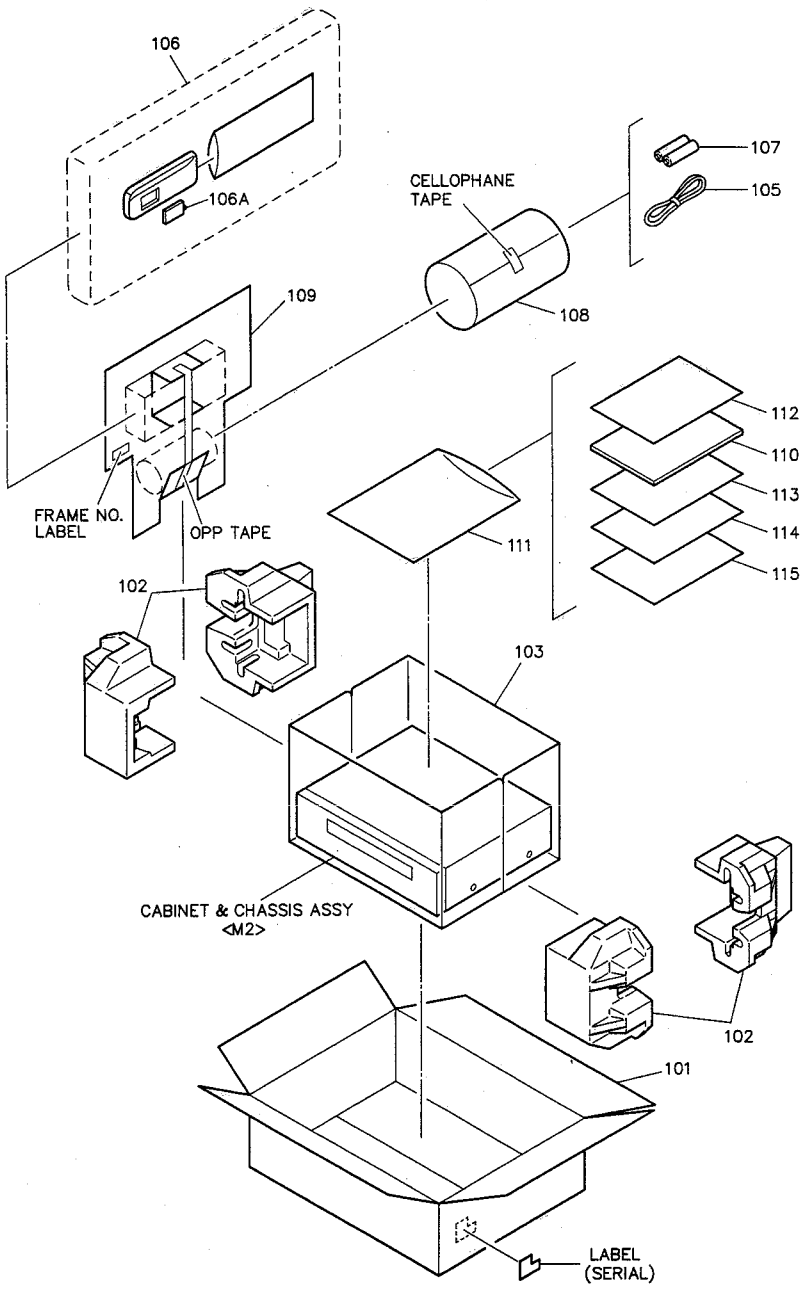


SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

PACKING AND ACCESSORY ASSEMBLY <M1>

		101	LP30155-041A	PACKING CASE
		102	LP30124-001A	CUSHION ASSY
		103	PQM30021-93	POLY BAG
		105	PEAC0300-02	RF CABLE
		106	PQ21953U-7	REMOTE CONTROLLER
		106A	PQ46614	COVER(BATTERY)
		107	R6PRPA-2ST	BATTERY,X2
		108	QPC02202215P	POLY BAG
		109	PQ35575-1-1	SHEET,REMOTE CONTROLLER
	⚠	110	LPT0002-0D8A	INST BOOK(EN)
		111	QPC02503515P	POLY BAG
		112	BT-54003-1	GUARANTY CARD
		113	BT-20066A	E.DISTRI.LIST

5.3 ELECTRICAL PARTS LIST

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********				

MAIN BOARD ASSEMBLY <03>

		PW1	PB11074P-02 MAIN BOARD ASSY
		IC1	HA118203AF IC
		IC2	MSM7470-79MS-XE IC
		IC101	HA118195NT IC
		IC401	AN3664NFB-A IC
		IC501	LA7257 IC
		IC701	HD6433929TA95F QFP IC (MCU)
			or HD6473929TFA95 QFP IC (MCU)
		IC702	24LC08B/P IC
			or AT24C08-10PC IC
			or X24C08-10P IC
		IC703	S-80728AN-DR-X IC
			or RH5VL28AA-XE IC
		IC704	TA7291S IC
		IC851	M38024M6-237FP QFP IC (MCU)
		IC852	TA7291S IC
		IC853	BA10358F IC
		IC1001	BA15218N IC
			or M5223L IC
		IC1101	BU2885CS IC
			or BU2885BS IC
			or BU2884BS IC
		Q1	2SD1819A(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
		Q2	UN521E TRANSISTOR
			or RN1309 TRANSISTOR
			or DTC144WU TRANSISTOR
		Q4	UN521E TRANSISTOR
			or RN1309 TRANSISTOR
			or DTC144WU TRANSISTOR
		Q9	UN511E TRANSISTOR
			or RN2309 TRANSISTOR
			or DTA144WU TRANSISTOR
		Q15	2SB1218A(QR) TRANSISTOR
			or 2SA1576(QR) TRANSISTOR
			or 2PA1576/R/-X TRANSISTOR
		Q19	2SB1218A(QR) TRANSISTOR
			or 2PA1576/R/-X TRANSISTOR
			or 2SA1576(QR) TRANSISTOR
		Q20	DTC114EU TRANSISTOR
			or UN5211 TRANSISTOR
		Q21	2SD1819A(QRS) TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
		Q22	UN511E TRANSISTOR
			or DTA144WU TRANSISTOR
			or RN2309 TRANSISTOR
		Q101	2SD1819A(QRS) TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
		Q102	UN511E TRANSISTOR
			or DTA144WU TRANSISTOR
			or RN2309 TRANSISTOR
		Q103	UN521E TRANSISTOR
			or RN1309 TRANSISTOR
			or DTC144WU TRANSISTOR
		Q258	2SB1218A(QR) TRANSISTOR
			or 2PA1576/R/-X TRANSISTOR
			or 2SA1576(QR) TRANSISTOR
		Q304	UN511E TRANSISTOR
			or RN2309 TRANSISTOR
			or DTA144WU TRANSISTOR
		Q305	UN5111 TRANSISTOR
			or DTA114EU TRANSISTOR
			or RN2302 TRANSISTOR
		Q306	2SD1819A(QRS) TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
		Q307	2SD1819A(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
		Q308	UN5211 TRANSISTOR
			or RN1302 TRANSISTOR
			or DTC114EU TRANSISTOR
		Q309	2SB1218A(QR) TRANSISTOR
			or 2PA1576/R/-X TRANSISTOR
			or 2SA1576(QR) TRANSISTOR
		Q310	2SB1218A(QR) TRANSISTOR
			or 2SA1576(QR) TRANSISTOR
			or 2PA1576/R/-X TRANSISTOR
		Q311	2SD1819A(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
		Q312	UN5111 TRANSISTOR
			or RN2302 TRANSISTOR
			or DTA114EU TRANSISTOR
		Q313	2SC1740S(QRS) TRANSISTOR
			or 2SC3199(YG)-TJK TRANSISTOR
		Q351	UN5211 TRANSISTOR
			or DTC114EU TRANSISTOR
			or RN1302 TRANSISTOR
		Q352	UN5211 TRANSISTOR
			or RN1302 TRANSISTOR
			or DTC114EU TRANSISTOR
		Q701	2SD1819A(QRS) TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
		Q704	LP40038-001A TAPE SENSOR
		Q705	LP40038-001A TAPE SENSOR
		Q706	UN5211 TRANSISTOR
			or DTC114EU TRANSISTOR
			or RN1302 TRANSISTOR
		Q711	2SD1819A(QRS) TRANSISTOR
			or 2SC4081(QRS) TRANSISTOR
			or 2PC4081/R/-X TRANSISTOR
		Q851	UN5211 TRANSISTOR
			or RN1302 TRANSISTOR
			or DTC114EU TRANSISTOR
		Q856	UN5211 TRANSISTOR
			or DTC114EU TRANSISTOR
			or RN1302 TRANSISTOR
		Q857	UN5211 TRANSISTOR
			or RN1302 TRANSISTOR
			or DTC114EU TRANSISTOR
		Q901	2SK2632-CB14 FE TRANSISTOR
			or 2SK2129-LT FE TRANSISTOR
			or 2SK2666F04 FE TRANSISTOR

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		Q902	2SD2144S(UV)	TRANSISTOR
		Q951	2SD2061(F)	TRANSISTOR
			or 2SD1913(RS)	TRANSISTOR
		Q952	2SD1819A(RS)	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SC4081(RS)	TRANSISTOR
		Q953	2SC3616(MLK)	TRANSISTOR
		Q954	UN5111	TRANSISTOR
			or DTA114EU	TRANSISTOR
			or RN2302	TRANSISTOR
		Q955	2SD2144S(UVW)	TRANSISTOR
		Q956	2SB1256	TRANSISTOR
		Q957	DTC114TU	TRANSISTOR
		Q958	2SC1740S(RS)	TRANSISTOR
			or 2SC3199(GB)-TJK	TRANSISTOR
		Q959	2SD1450S,T	TRANSISTOR
			or 2SD1302(ST)	TRANSISTOR
		Q962	UN5211	TRANSISTOR
			or RN1302	TRANSISTOR
			or DTC114EU	TRANSISTOR
		Q1002	2SB810H,J	TRANSISTOR
		Q1003	2SC3068	TRANSISTOR
		Q1008	2SB1218A(RS)	TRANSISTOR
			or 2SA1576(RS)	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1101	UN5211	TRANSISTOR
			or RN1302	TRANSISTOR
			or DTC114EU	TRANSISTOR
		D1	1N4148M	DIODE
			or 1SS133	DIODE
		D5	1N4148M	DIODE
			or 1SS133	DIODE
		D8	1N4148M	DIODE
			or 1SS133	DIODE
		D10	1N4148M	DIODE
			or 1SS133	DIODE
		D254	1N4148M	DIODE
			or 1SS133	DIODE
		D301	1N4148M	DIODE
			or 1SS133	DIODE
		D401	1N4148M	BUS WIRE
			or 1SS133	DIODE
		D402	11ES2	DIODE
		D701	RD9.1ES-T1B2	ZENER DIODE
			or MTZJ9.1B	ZENER DIODE
		D702	11ES2	DIODE
		D703	1N4148M	DIODE
			or 1SS133	DIODE
		D704	11ES2	DIODE
		D705	1N4148M	DIODE
			or 1SS133	DIODE
		D706	1N4148M	DIODE
			or 1SS133	DIODE
		D710	SIR-381SB3FM	LE DIODE
			or SIR-381SB3FX1M	LE DIODE
		D711	1N4148M	DIODE
			or 1SS133	DIODE
		D714	1N4148M	DIODE
			or 1SS133	DIODE
		D715	1N4148M	DIODE
			or 1SS133	DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		D901	S1WB(A)60F4072X	BRIDGE DIODE	
			or S1WB(A)60F4062X	BRIDGE DIODE	
		D908	1SS133	DIODE	
			or 1N4148M	DIODE	
		D909	UZ27BSB	ZENER DIODE	
			or MTZJ27B	ZENER DIODE	
			or RD27ES/B2/-T2	ZENER DIODE	
		D910	AU01	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
			or 10ELS4	FR DIODE	
			or ERA18-04-T2	FR DIODE	
		D911	AU01	FR DIODE	
			or ERA18-04-T2	FR DIODE	
			or 10ELS4	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
		D951	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or 10ELS2	FR DIODE	
			or 1SR153-200-T2	FR DIODE	
		D955	RD15ES/B1/-T2	ZENER DIODE	
			or UZ15BSA	ZENER DIODE	
			or MTZJ15A	ZENER DIODE	
		D956	UZ6.2BSC	ZENER DIODE	
			or RD6.2ES-T1B3	ZENER DIODE	
			or MTZJ6.2C	ZENER DIODE	
		D958	RD30ES/B1/-T2	ZENER DIODE	
			or UZ30BSA	ZENER DIODE	
			or MTZJ30A	ZENER DIODE	
		D960	1SS133	DIODE	
			or 1N4148M	DIODE	
		D962	RD5.1JSB2	DIODE	
			or MA4051N(M)	ZENER DIODE	
		D963	1SS133	DIODE	
			or 1N4148M	DIODE	
		D964	11ES2	DIODE	
			or ERA15-02	DIODE	
		D965	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or 1SR153-200-T2	FR DIODE	
			or 10ELS2	FR DIODE	
		D968	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or 1SR153-200-T2	FR DIODE	
			or 10ELS2	FR DIODE	
		D969	10ELS2	FR DIODE	
			or 1SR153-200-T2	FR DIODE	
			or ERA18-02-T2	FR DIODE	
		D972	FML-12S	FR DIODE	
			or FCF06A20	FR DIODE	
			or MA644	FR DIODE	
			or YG901C2	FR DIODE	
		D973	FMB-24	BARRIER DIODE	
			or F5KQ40B	BARRIER DIODE	
			or YG801C04	SB DIODE	
			or MA7D49	SB DIODE	
		D1001	MTZ10B	ZENER DIODE	
		D1002	MTZJ33C	ZENER DIODE	
			or UZ33BSC	DIODE	
		R1	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
		R2	NRSA02J-751X	MG RESISTOR	750Ω,1/10W
		R3	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R4	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R6	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R7	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R8	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R9	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R10	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R11	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R12	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R13	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R14	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R15	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R16	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R17	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R20	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R21	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R22	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R23	QRSA08J-823YN	RESISTOR	82kΩ,1/10W
		R24	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R27	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R31	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R32	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R34	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R35	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R36	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R43	NRSA02J-225X	MG RESISTOR	2.2MΩ,1/10W
		R45	NRSA02J-395X	MG RESISTOR	3.9MΩ,1/10W
		R46	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R47	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R50	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R52	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R53	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R54	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R57	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R58	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R59	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R65	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R66	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R67	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R68	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R69	QRE141J-0R0	RESISTOR	0Ω,1/4W
		R101	NRSA02J-912X	MG RESISTOR	9.1kΩ,1/10W
		R102	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R103	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R104	NRVA02D-152X	RESISTOR	1.5kΩ,1/10W
		R105	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R106	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R107	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R221	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R222	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R280	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R281	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R284	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R301	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R302	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R303	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R305	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R306	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R307	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R308	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R310	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R312	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R313	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R314	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R315	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R316	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R317	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R318	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R320	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R321	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R331	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R332	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R333	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R334	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R335	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
		R336	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R337	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R338	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R341	QRE141J-3R3Y	RESISTOR	3.3Ω,1/4W
		R342	QRE141J-273Y	RESISTOR	27kΩ,1/4W
		R343	QRE141J-151Y	RESISTOR	150Ω,1/4W
		R351	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R352	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R353	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R355	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R401	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R402	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R403	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R404	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R405	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R406	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R407	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R409	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R410	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R411	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R412	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R413	NRSA02J-511X	MG RESISTOR	510Ω,1/10W
		R416	NRSA02J-511X	MG RESISTOR	510Ω,1/10W
		R417	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R418	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R419	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R420	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R422	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R423	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R424	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R425	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R426	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R427	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R428	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R429	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R431	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R432	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R436	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R437	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R438	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R441	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R442	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R501	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
		R502	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R503	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R506	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R507	NRSA02J-681X	MG RESISTOR	680Ω,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R701	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R702	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R703	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R704	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R705	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R706	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R707	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R708	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R709	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R710	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R711	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R712	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R713	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R714	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R715	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R716	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R717	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R718	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R719	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R720	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R721	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R722	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R723	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R725	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R726	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R727	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R728	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R729	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R730	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R731	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R732	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R733	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R734	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R735	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R736	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R738	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R739	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R740	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R741	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R742	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R743	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R744	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R745	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R746	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R747	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R748	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R749	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R750	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R751	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R753	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R754	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R755	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R756	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R757	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R758	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R760	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R761	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R762	QRE141J-221Y	RESISTOR	220Ω,1/4W
R763	QRE141J-221Y	RESISTOR	220Ω,1/4W
R764	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R765	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R766	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
R767	QRE141J-334Y	RESISTOR	330kΩ,1/4W
R769	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R770	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R771	QRE141J-104Y	RESISTOR	100kΩ,1/4W
R772	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R773	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R774	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
R775	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R776	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R777	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R778	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R779	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R780	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R781	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R782	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R784	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R785	QRE141J-181Y	RESISTOR	180Ω,1/4W
R786	QRE141J-750Y	RESISTOR	75Ω,1/4W
R787	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R788	QRE141J-822Y	RESISTOR	8.2kΩ,1/4W
R789	QRE141J-822Y	RESISTOR	8.2kΩ,1/4W
R790	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R793	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R795	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R800	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R801	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R805	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R806	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R809	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R810	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R811	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R812	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R814	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R815	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R816	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R817	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R818	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R819	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R820	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R821	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R834	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R835	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R840	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R841	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R842	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R843	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R845	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R851	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R852	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R853	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R854	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R855	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R856	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R857	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R858	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R859	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R860	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R861	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R862	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R863	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R864	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R865	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R868	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R869	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R870	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R871	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R872	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R874	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R876	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R877	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R878	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R879	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R880	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R881	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R882	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R883	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R884	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R885	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R886	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R887	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R888	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R889	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R890	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R891	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R893	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R894	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R901	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R902	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R903	QRE141J-683Y	RESISTOR	68kΩ,1/4W
		R904	QRE121J-331Y	RESISTOR	330Ω,1/2W
		R905	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
		R906	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R908	QRG03GJ-683	OMF RESISTOR	68kΩ,3W
		R909	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R910	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R911	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R951	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R952	QRA14CF-2211Y	CMF RESISTOR	2.21kΩ,1/4W
		R953	QRA14CF-3481Y	CMF RESISTOR	3.48kΩ,1/4W
		R954	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R955	QRL02DJ-222X	OMF RESISTOR	2.2kΩ,2W
	⚠	R957	QRZ9005-101X	FUSI RESISTOR	100Ω
		R958	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R959	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R960	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R961	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R963	QRE141J-511Y	RESISTOR	510Ω,1/4W
		R964	QRE141J-471Y	RESISTOR	470Ω,1/4W
		R965	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R966	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R967	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R968	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R970	QRL01DJ-200X	OMF RESISTOR	20Ω,1W
		R971	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R972	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R973	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R974	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R975	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R976	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1001	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1002	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R1003	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R1004	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1011	QRE141J-562Y	RESISTOR	5.6kΩ,1/4W
		R1012	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1016	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1026	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1027	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R1030	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1038	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1048	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1049	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1102	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R1103	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1105	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1106	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1107	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R1108	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1109	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R1112	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1113	QRSA08J-133YN	RESISTOR	13kΩ,1/10W
		R1114	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1115	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1438	QRSA08J-750YN	RESISTOR	75Ω,1/10W
		C1	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C2	NDC21HJ-680X	CAPACITOR	68pF,50V
		C3	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C4	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C5	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C6	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C7	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C9	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C10	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C11	QERF1HM-335	E CAPACITOR	3.3μF,50V
		C12	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C13	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C14	NDC21HJ-221X	CAPACITOR	220pF,50V
		C15	NDC21HJ-680X	CAPACITOR	68pF,50V
		C16	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C17	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
		C18	NCB21EK-223X	CAPACITOR	0.022μF,25V
		C19	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C20	NCB21EK-333X	CAPACITOR	0.033μF,25V
		C22	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C23	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C24	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C25	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C28	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C29	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C30	QEKJ1HM-104	E CAPACITOR	0.1μF,50V
		C31	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C32	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C33	NDC21HJ-180X	CAPACITOR	18pF,50V
		C34	NCB21EK-473X	CAPACITOR	0.047μF,25V
		C35	NCB21CK-224X	CAPACITOR	0.22μF,16V
		C36	NDC21HJ-390X	CAPACITOR	39pF,50V
		C37	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C38	NDC21HJ-151X	CAPACITOR	150pF,50V
		C39	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C41	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C42	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C43	NCB21EK-104X	CAPACITOR	0.1μF,25V

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C44	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C45	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C47	NDC21HJ-100X	CAPACITOR	10pF,50V
	C48	NCB21HK-183X	CAPACITOR	0.018μF,50V
	C52	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C54	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C55	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C56	NDC21HJ-9R0X	CAPACITOR	9pF,50V
	C58	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C60	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C61	NDC21HJ-5R0X	CAPACITOR	5pF,50V
	C63	NCB21HK-221X	CAPACITOR	220pF,50V
	C64	NDC21HJ-101X	CAPACITOR	100pF,50V
	C65	NDC21HJ-470X	CAPACITOR	47pF,50V
	C66	NDC21HJ-101X	CAPACITOR	100pF,50V
	C75	NDC21HJ-330X	CAPACITOR	33pF,50V
	C101	NCF21HZ-103X	CAPACITOR	0.01μF,50V
	C102	NCF21HZ-103X	CAPACITOR	0.01μF,50V
	C103	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C104	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C105	NCB21EK-473X	CAPACITOR	0.047μF,25V
	C106	NCB21HK-272X	CAPACITOR	0.0027μF,50V
	C107	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C110	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C111	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C112	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C113	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C114	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C115	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C116	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C117	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C118	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C119	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C120	QCBB1HK-331	CAPACITOR	330pF,50V
	C121	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C123	NDC21HJ-150X	CAPACITOR	15pF,50V
	C124	NDC21HJ-150X	CAPACITOR	15pF,50V
	C125	NDC21HJ-560X	CAPACITOR	56pF,50V
	C126	NDC21HJ-560X	CAPACITOR	56pF,50V
	C127	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C271	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C301	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C302	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V
	C303	QFLC1HJ-223Z	F CAPACITOR	0.022μF,50V
	C306	NCB21HK-222X	CAPACITOR	0.0022μF,50V
	C307	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C308	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C309	NCB21HK-153X	CAPACITOR	0.015μF,50V
	C310	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C311	NCB21EK-333X	CAPACITOR	0.033μF,25V
	C312	NCB21EK-333X	CAPACITOR	0.033μF,25V
	C313	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C314	NCB21HK-182X	CAPACITOR	0.0018μF,50V
	C315	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C317	QEKJ1CM-107	E CAPACITOR	100μF,16V
	C318	NCB21HK-331X	CAPACITOR	330pF,50V
	C319	NDC21HJ-101X	CAPACITOR	100pF,50V
	C331	NCB21EK-103X	CAPACITOR	0.01μF,25V
	C332	NCB21HK-332X	CAPACITOR	0.0033μF,50V
	C333	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C334	NCB21HK-331X	CAPACITOR	330pF,50V

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C335	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
	C341	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C342	QCXB1CM-332	CAPACITOR	0.0033μF,16V
	C343	QETC1HM-106	E CAPACITOR	10μF,50V
	C344	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
	C351	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C352	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C402	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C403	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C404	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C405	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C406	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C407	NCB21EK-473X	CAPACITOR	0.047μF,25V
	C408	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C409	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C410	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C411	NCB21HK-153X	CAPACITOR	0.015μF,50V
	C412	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C413	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C414	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C415	QEKJ1HM-224	E CAPACITOR	0.22μF,50V
	C416	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C417	NCB21HK-153X	CAPACITOR	0.015μF,50V
	C418	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C419	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C420	NCB21EK-473X	CAPACITOR	0.047μF,25V
	C421	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C422	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C423	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C424	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C425	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C426	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C427	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C428	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C429	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C430	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C431	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C432	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C433	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
	C434	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C436	NCB21HK-102X	CAPACITOR	0.001μF,50V
	C441	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C501	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C502	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C503	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C504	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C505	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C506	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C507	NCB21EK-563X	CAPACITOR	0.056μF,25V
	C508	NCB21HK-221X	CAPACITOR	220pF,50V
	C509	NCB21HK-102X	CAPACITOR	0.001μF,50V
	C510	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C511	NCB21HK-102X	CAPACITOR	0.001μF,50V
	C512	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C701	QAT3120-450Z	TRIM CAPACITOR,TIMER CLOCK	
	C702	NDC21HJ-180X	CAPACITOR	18pF,50V
	C703	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C704	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C709	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C710	NDC21HJ-101X	CAPACITOR	100pF,50V
	C711	NDC21HJ-101X	CAPACITOR	100pF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C712	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C715	QCVB1CM-103	CAPACITOR	0.01μF,16V
		C717	QEKJ1CM-336	E CAPACITOR	33μF,16V
		C719	QETN0JM-228ZS	E CAPACITOR	2200μF,6.3V
		C730	QETC1HM-106	E CAPACITOR	10μF,50V
		C731	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C736	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C750	NDC21HJ-470X	CAPACITOR	47pF,50V
		C851	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C852	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C856	QCBB1HK-102	CAPACITOR	0.001μF,50V
		C861	NCB21EK-333X	CAPACITOR	0.033μF,25V
		C862	NCB21EK-333X	CAPACITOR	0.033μF,25V
		C863	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C865	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	⚠	C901	QFZ9067-683	F CAPACITOR	0.068μF
	⚠	C903	QFZ9067-333	F CAPACITOR	0.033μF
		C906	QETC1HM-105	E CAPACITOR	1μF,50V
		C908	QFV11HJ-104AZ	F CAPACITOR	0.1μF,50V
		C910	PECA0738-686	E CAPACITOR	68μF
	⚠	C911	QCZ9079-222	CAPACITOR	0.0022μF
		C915	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V
		C916	QCBB1HJ-271	CAPACITOR	270pF,50V
		C917	QCZ0212-472	CAPACITOR	0.0047μF,1kV
		C951	QEMU0JM-227	E CAPACITOR	220μF,6.3V
		C953	QEMT1AM-687	E CAPACITOR	680μF,10V
		C954	QEMT1CM-827	E CAPACITOR	820μF,16V
		C955	QEMU1EM-187	E CAPACITOR	180μF,25V
		C959	QETC1JM-106	E CAPACITOR	10μF,63V
		C960	QETC1HM-226	E CAPACITOR	22μF,50V
		C961	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C962	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C963	QETC1AM-107	E CAPACITOR	100μF,10V
		C964	QETC1CM-226	E CAPACITOR	22μF,16V
		C965	QETC1AM-107	E CAPACITOR	100μF,10V
		C966	QETC1HM-106	E CAPACITOR	10μF,50V
		C967	QEKJ1CM-107	E CAPACITOR	100μF,16V
		C968	QETC1CM-476	E CAPACITOR	47μF,16V
		C969	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
		C971	QETC1AM-227	E CAPACITOR	220μF,10V
		C972	QETC1CM-227	E CAPACITOR	220μF,16V
		C1001	QETC1CM-336	E CAPACITOR	33μF,16V
		C1002	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1003	QETC1HM-106	E CAPACITOR	10μF,50V
		C1004	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1007	NCB21EK-473X	CAPACITOR	0.047μF,25V
		C1008	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1014	NCB21EK-473X	CAPACITOR	0.047μF,25V
		C1033	NDC21HJ-101X	CAPACITOR	100pF,50V
		C1034	NDC21HJ-101X	CAPACITOR	100pF,50V
		C1054	NCF21EZ-473X	CAPACITOR	0.047μF,25V
		C1055	NCF21EZ-473X	CAPACITOR	0.047μF,25V
		C1101	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1103	NCB21EK-563X	CAPACITOR	0.056μF,25V
		C1104	NDC21HJ-101X	CAPACITOR	100pF,50V
		C1105	NCB21EK-223X	CAPACITOR	0.022μF,25V
		C1106	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C1107	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1110	NCB21HK-222X	CAPACITOR	0.0022μF,50V
		C1111	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C1113	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1114	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1115	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C1116	QEKJ1HM-105	E CAPACITOR	1μF,50V
		L1	QQL29BJ-100Z	COIL	10μH
		L2	PELN1203	COIL	
		L3	PU59152-5R6J	COIL	5.6μH
		L5	PU59152-820J	COIL	82μH
		L6	QQL29BJ-100Z	COIL	10μH
		L8	QQL29BJ-221Z	COIL	220μH
		L9	PU59152-680J	COIL	68μH
		L10	QQL29BJ-221Z	COIL	220μH
		L11	QQL29BJ-331Z	COIL	330μH
		L15	QQL29BK-1R0Z	COIL	1μH
		L17	PU59152-121J	COIL	120μH
		L101	QQL29BJ-100Z	COIL	100μH
		L301	PU58308-123J	COIL	12mH
		L501	QQL29BJ-100Z	COIL	10μH
		L703	QQL29BJ-100Z	COIL	10μH
		L951	PELN0687	COIL	
		L953	PELN0687	COIL	
		L954	QQL29BJ-101Z	COIL	100μH
		L1003	QQL29BK-1R0Z	COIL	1μH
	⚠	LF901	PELN1204-01-01	LINE FILTER	
	⚠	LF902	QQR0608-001	LINE FILTER	
		CF701	PEVB0594-Z	RESONATOR	
		CF851	PU60440-2	RESONATOR	
		X1	PEVB0679	CRYSTAL RESONATOR	
		X701	PEVB0422	CRYSTAL RESONATOR	
		K901	PELN0662-Z	FERRATE BEADS	
	⚠	PC901	PC123F2	PH COUPLER	
		PS701	SG-246	IC(PHOTO SENSOR	
		PS702	SG-246	IC(PHOTO SENSOR	
		T301	PELN0860	OSC TRANSFORMER	
		T302	PELN0861	OSC TRANSFORMER	
	⚠	T901	QQS0010-001	SW TRANSF	
		TU1001	QAU0011-001	TUNER	
		UN1001	QAU0029-001	IF UNIT	
	⚠	HS1	PQ45788-1-2	HEAT SINK,Q901	
	⚠	FC901	PEMC0965-Z	FUSE CLIP	
	⚠	FC902	PEMC0965-Z	FUSE CLIP	
		OT1	SDST3006Z	SCREW,HEAT SINK	
		SD1	PQ35384	SHIELD CASE	
		SD2	PQ46515	SHIELD PLATE	
		CN1	PEMC1163-009	CONNECTOR,(1-9)UPPER DRUM	
		CN301	PU60727-7	CONNECTOR,(1-7)A/C HEAD	
		CN302	PU60727-2	CONNECTOR,(1-2)FE HEAD	
		CN701	PEMC1077	CONNECTOR,(1-8)CAP MDA	
		CN702	PU61434-1-1	CONNECTOR,(1-5)ROTARY ENCORDE	
		CN703	PU60727-2	CONNECTOR,(1-2)LOADING MOTOR	
		CN802	PEMC1101-012	FFC CONNECTOR,(1-12)DISPLAY	
		CN851	PU60727-6	CONNECTOR,(1-6)DD SENSOR	
		CN854	PEMC1101-008	FFC CONNECTOR,(1-8)JOG/SHUTTL	
	⚠	CN901	PU60250-2	CONNECTOR,(1-2)AC IN	
		CN1102	PEMC1101-004	FFC CONNECTOR,(1-4)DRUM MOTOR	
		CN1404	PEMC1168-015	CONNECTOR,(1-15)TERMINAL	
		CN1405	PEMC1168-015	CONNECTOR,(1-15)TERMINAL	
		CN1406	PEMC1168-015	CONNECTOR,(1-15)TERMINAL	
		CN1407	PEMC1101-006	FFC CONNECTOR,(1-6)DISPLAY	
	⚠	CP701	ICP-N25	CIRCUIT PROTECTOR	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	⚠	CP851	ICP-N20	CIRCUIT PROTECTOR	
	⚠	CP901	ICP-N25	CIRCUIT PROTECTOR	
	⚠	CP902	ICP-N25	CIRCUIT PROTECTOR	
	⚠	CP1101	ICP-N15	CIRCUIT PROTECTOR	
	⚠	F901	QMF51E2-1R25J1	FUSE	T1.2A

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TERMINAL BOARD ASSEMBLY <06>

		PW1	PB11073B	TERMINAL BOARD ASSY
		IC202	TC74HC4052AP	IC(DIGITAL)
		IC651	AN7395S	IC
		IC1301	LC74795-9601	IC
		Q202	2SB1218A(QR)	TRANSISTOR
			or 2SA1576(QR)	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q205	2SD1819A(QRS)	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SC4081(QRS)	TRANSISTOR
	⚠	Q651	2SD1819A(QRS)	TRANSISTOR
	⚠		or 2PC4081/R/-X	TRANSISTOR
	⚠		or 2SC4081(QRS)	TRANSISTOR
		Q1351	2SB1218A(QR)	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
			or 2SA1576(QR)	TRANSISTOR
		Q1352	2SD1819A(QRS)	TRANSISTOR
			or 2SC4081(QRS)	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q1401	2SB1218A(QR)	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
			or 2SA1576(QR)	TRANSISTOR
		Q1402	UN521E	TRANSISTOR
			or RN1309	TRANSISTOR
			or DTC144WU	TRANSISTOR
		D651	MTZ10B	ZENER DIODE
			or RD10ES/B2/-T2	ZENER DIODE
		D1301	1SS133	DIODE
			or 1N4148M	DIODE
		R203	QRE123J-331X	RESISTOR 330Ω,1/2W
		R207	NRSA02J-101X	RESISTOR 100Ω,1/10W
		R212	QRSA08J-223YN	RESISTOR 22kΩ,1/10W
		R213	QRSA08J-223YN	RESISTOR 22kΩ,1/10W
		R214	QRSA08J-222YN	RESISTOR 2.2kΩ,1/10W
		R215	QRSA08J-820YN	RESISTOR 82Ω,1/10W
		R216	QRSA08J-750YN	RESISTOR 75Ω,1/10W
		R218	QRSA08J-750YN	RESISTOR 75Ω,1/10W
		R219	NRSA02J-102X	RESISTOR 1kΩ,1/10W
		R220	NRSA02J-101X	RESISTOR 100Ω,1/10W
		R224	QRSA08J-473YN	RESISTOR 47kΩ,1/10W
		R225	QRSA08J-473YN	RESISTOR 47kΩ,1/10W
		R227	NRSA02J-101X	RESISTOR 100Ω,1/10W
		R601	QRSA08J-0R0Y	RESISTOR 0Ω,1/10W
		R605	QRSA08J-0R0Y	RESISTOR 0Ω,1/10W
		R615	QRSA08J-221YN	RESISTOR 220Ω,1/10W
		R627	QRSA08J-221YN	RESISTOR 220Ω,1/10W
		R628	QRSA08J-221YN	RESISTOR 220Ω,1/10W
		R629	QRSA08J-221YN	RESISTOR 220Ω,1/10W
		R651	NRSA02J-105X	RESISTOR 1MΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R652	NRSA02J-122X	RESISTOR	1.2kΩ,1/10W
		R653	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
		R654	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R655	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R656	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
		R657	NRSA02J-101X	RESISTOR	100Ω,1/10W
		R658	QRSA08J-221YN	RESISTOR	220Ω,1/10W
		R659	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1301	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
		R1302	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
		R1304	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1307	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1308	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1309	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1310	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1351	NRSA02J-123X	RESISTOR	12kΩ,1/10W
		R1352	NRSA02J-182X	RESISTOR	1.8kΩ,1/10W
		R1353	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
		R1354	NRSA02J-103X	RESISTOR	10kΩ,1/10W
		R1355	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
		R1359	NRSA02J-101X	RESISTOR	100Ω,1/10W
		R1401	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
		R1402	NRSA02J-102X	RESISTOR	1kΩ,1/10W
		R1403	QRE123J-331X	RESISTOR	330Ω,1/2W
		C202	QETA1CM-337	E CAPACITOR	330μF,16V
		C203	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C204	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C205	QETA0JM-477	E CAPACITOR	470μF,6.3V
		C217	QEKJ1HM-106	E CAPACITOR	10μF,50V
		C218	QEKJ1HM-106	E CAPACITOR	10μF,50V
		C219	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C221	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C651	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C652	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C653	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C654	NCB21HK-563X	CAPACITOR	0.056μF,50V
		C655	NCB21HK-393X	CAPACITOR	0.039μF,50V
		C656	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C657	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C659	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C661	NCB21HK-273X	CAPACITOR	0.027μF,50V
		C662	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C663	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C664	QEKJ1CM-476	E CAPACITOR	47μF,16V
		C665	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C666	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1301	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1303	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1304	NDC21HJ-560X	CAPACITOR	56pF,50V
		C1305	QEKJ0JM-227	E CAPACITOR	220μF,6.3V
		C1306	NCB21CK-224X	CAPACITOR	0.22μF,16V
		C1307	NDC21HJ-100X	CAPACITOR	10pF,50V
		C1317	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1318	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1321	NCB21CK-224X	CAPACITOR	0.22μF,16V
		C1351	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1352	NCB21HK-563X	CAPACITOR	0.056μF,50V
		C1354	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1355	NCB21CK-224X	CAPACITOR	0.22μF,16V
		C1357	QEKJ0JM-227	E CAPACITOR	220μF,6.3V
		C1401	NCB21HK-681X	CAPACITOR	680pF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

****

TRI-R BOARD ASSEMBLY <39>

		PW1	PB11049A-01	TRI-R BOARD ASSEMBLY	
		IC3001	JCP0065	IC	
		Q3001	DTC124EU	TRANSISTOR	
		R3001	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
		R3002	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
		R3003	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
		R3004	QRSA08J-564YN	RESISTOR	560kΩ,1/10W
		R3005	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
		R3006	QRE141J-184Y	RESISTOR	180kΩ,1/4W
		R3007	NRSA02J-102X	RESISTOR	1kΩ,1/10W
		R3008	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
		R3009	NRSA02J-155X	RESISTOR	1.5MΩ,1/10W
		C3001	NDC21HJ-221X	CAPACITOR	220pF,50V
		C3003	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3004	NDC21HJ-221X	CAPACITOR	220pF,50V
		C3005	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3006	NCF21HZ-103X	CAPACITOR	0.01μF,50V
		C3007	QCSB1HJ-220	CAPACITOR	22pF,50V
		C3008	NCF21HZ-103X	CAPACITOR	0.01μF,50V
		C3009	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3010	NDC21HJ-331X	CAPACITOR	330pF,50V
		C3011	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3012	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3013	QETC1CM-476	E CAPACITOR	47μF,16V
		C3014	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3015	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3016	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3017	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3018	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3019	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3020	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3021	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3022	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3023	NCB21CK-474X	CAPACITOR	0.47μF,16V
		C3024	NCB21CK-474X	CAPACITOR	0.47μF,16V
		C3025	NDC21HJ-391X	CAPACITOR	390pF,50V
		C3031	QETC1HM-105	E CAPACITOR	1μF,50V
		BK1	LP40077-001A	BRACKET(PWB)	
		CN3001	PEMC0712-110	PIN HEADER,(1-10)MAIN	

****

VSC BOARD ASSEMBLY <72>

	PW1	PB10995A-01	VSC BOARD ASSEMBLY	
	IC2501	LC85401E	IC	
		or LC85401ED	IC	
	IC2502	LC32256P-80	IC	
		or LC32256P-80-A	IC	
	Q2501	2SC4081(QRS)	TRANSISTOR	
	Q2502	DTC144WU	TRANSISTOR	
	D2501	1N4148M	DIODE	
		or MA165	DIODE	
		or 1SS133	DIODE	
	R2501	NRSA02J-102X	RESISTOR	1kΩ,1/10W
	R2502	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R2503	NRSA02J-104X	RESISTOR	100kΩ,1/10W
	R2504	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R2505	NRSA02J-105X	RESISTOR	1MΩ,1/10W
	R2506	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R2507	NRSA02J-102X	RESISTOR	1kΩ,1/10W
	R2508	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R2509	NRSA02J-103X	RESISTOR	10kΩ,1/10W
	R2510	NRSA02J-104X	RESISTOR	100kΩ,1/10W
	R2511	NRSA02J-104X	RESISTOR	100kΩ,1/10W
	R2512	NRSA02J-102X	RESISTOR	1kΩ,1/10W
	R2513	NRSA02J-102X	RESISTOR	1kΩ,1/10W
	R2514	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R2515	NRSA02J-0R0X	RESISTOR	0Ω,1/10W
	R2516	NRSA02J-0R0X	RESISTOR	0Ω,1/10W
	R2518	NRSA02J-102X	RESISTOR	1kΩ,1/10W
	R2519	NRSA02J-102X	RESISTOR	1kΩ,1/10W
	R2520	NRSA02J-101X	RESISTOR	100Ω,1/10W
	C2501	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
	C2502	NCB21HK-562X	CAPACITOR	0.0056μF,50V
	C2503	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C2505	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
	C2506	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2507	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C2508	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2509	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2510	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C2511	NCB21HK-222X	CAPACITOR	0.0022μF,50V
	C2513	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2514	NCB21HK-103X	CAPACITOR	0.01μF,50V
	L2501	PELN0975-2R2JZ	COIL	2.2μH
	LPF2501	PELN1137	LOW PASS FILTER	
	CF2501	PEVB0671	RESONATOR	
	LC2501	PU59736-103	N FILTER	
	CN2501	PEMC0712-109	PIN HEADER,(1-9)MAIN	

SECTION 6
TECHNICAL INFORMATION

6. SYSCON CIRCUIT

6.1.1 Syscon CPU pin function (IC701) 1/2

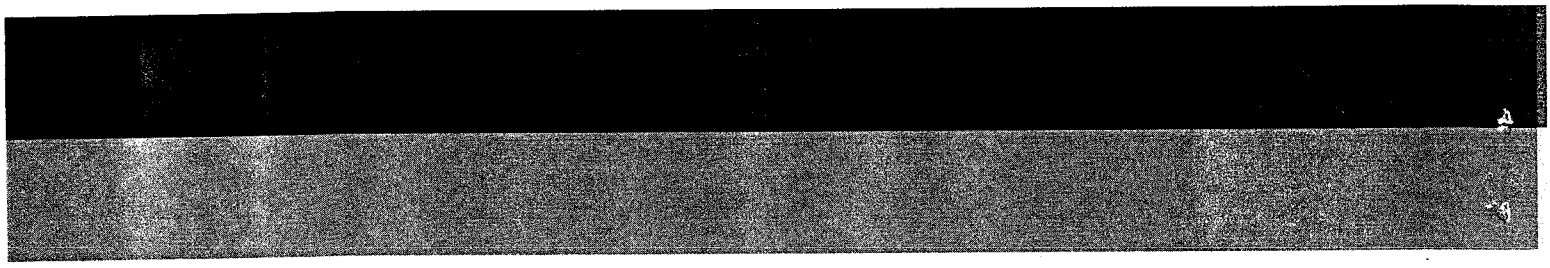
PIN NO	LABEL	IN/OUT	NOTE
1	S. CURVE	IN	TUNING CHECK
2	AVRG FM	IN	AUTO TRACKING DETECT (AVERAGE VOLTAGE OF PB FM LEVEL INPUT)
3	P. DOWN	IN	POWER DOWN DETECT (POWER DOWN: H to L)
4	6.5H DET	IN	PB SWITCHING POINT ADJUST PULSE
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	TIMER CLOCK (32.768 kHz)
8	X1	-	TIMER CLOCK (32.768 kHz)
9	VSS	-	GND
10	OSC1	-	SYSTEM CLOCK (10 MHz)
11	OSC2	-	SYSTEM CLOCK (10 MHz)
12	RESET	-	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	LSC	IN	MECHANISM MODE DETECT (C)
15	LSB	IN	MECHANISM MODE DETECT (B)
16	LSA	IN	MECHANISM MODE DETECT (A)
17	C.L. END	IN	CASSETTE TAPE LOAD SWITCH (CASSETTE IN: L)
18	RECSF	IN	REC SAFETY SWITCH DETECT (SW ON: L)
19	STTS	IN	LEADER TAPE DETECT (DETECT ON: L)
20	ENDS	IN	TRAILER TAPE DETECT (DETECT ON: L)
21	R. PAUSE	IN	REMOTE PAUSE CTL (PAUSE ON: L)
22	TU FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	A. MUTE	OUT	AUDIO MUTE CONTROL (MUTE ON: H)
25	DD CS	OUT	CHIP SELECT to DD CPU
26	DD BUSY	IN	DATA TRANSMIT PERMISSION from DD CPU
27	DD RESET	OUT	RESET PULSE to DD CPU
28	PLL DATA	OUT	TUNING IC DATA
29	LOCK DET	IN	TUNING LOCK CHECK
30	PLL CE	OUT	TUNING IC CHIP ENABLE
31	TU CTL(H)	OUT	TUNER CONTROL (TUNER ON: H)
32	REC ST(H)	OUT	REC START: H
33	H. RECST	OUT	HiFi AUDIO REC REC START: H
34	A. WIDE(H)	OUT	AUDIO EFECT CONTROL (AUDIO WIDE: H)
35	P. MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE ON: L)
36	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
37	B/W(H)	OUT	BLACK/WHITE SWITCH DETECT
38	REC(H)	OUT	REC MODE: H
39	COL ROT	OUT	COLOUR ROTATION CONTROL INPUT
40	AV CTL4	OUT	INPUT SELECT (FRONT or REAR)

Table 6-1-1 SYSCON CPU pin function(1/2)

6.1.2 Syscon CPU pin function (IC701) 2/2

PIN NO	LABEL	IN/OUT	NOTE
41	SECAM VL (H)	OUT	SECAM TUNER CONTROL
42	EXP DATA	-	NC
43	I2C CLK	OUT	DATA TRANSFER CLOCK to TUNER AND ON SCREEN
44	I2C DATA	IN	DATA INPUT from TUNER AND ON SCREEN
45	VPCTL	OUT	V. PULSE ADDITION TIMING CONTROL
46	SYNC DET	OUT	SYNC DETECT (NO SYNC: H)
47	V. UP (H)	OUT	CAPSTAN MOTOR SPEED CONTROL (VOLTAGE UP CONTROL: M12V(L) TO M17V(H)
48	SECAM DET	-	NC
49	MESECAM DET	IN	MESECAM MODEDETECT: H
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	FLYST (L)	OUT	FLYING ERASE HEAD CONTROL (START: L)
52	CTL C/D	IN	CTL PULSE INPUT (MODE DETECT/BLANK PORTION DET)
53	RAE OUT	-	NC
54	CAP REV	OUT	CAPSTAN MOTOR CONTROL (FWD: H/REV: L)
55	OSD CS	OUT	CPU CHIP SELECT to ON SCREEN CPU
56	COM CLOCK	OUT	DATA TRANSFER CLOCK OUTPUT for EXPAND IC AND TUNER
57	S OUT	OUT	SERIAL DATA OUTPUT to DISPLAY CPU, ON SCREEN CPU AND DD CPU
58	S IN	IN	SERIAL DATA INPUT from DISPLAY CPU, ON SCREEN CPU AND DD CPU
59	S CLK	OUT	SERIAL DATA TRANSFER CLOCK for DISPLAY CPU, ON SCREEN CPU AND DD CPU
60	H. DATA	OUT	SERIAL DATA OUTPUT to VIDEO/AUDIO CPU
61	STB	OUT	CLOCK OUTPUT PERMISSION to DISPLAY CPU
62	H. CLK	OUT	SERIAL DATA TRANSFER CLOCK for VIDEO/AUDIO CPU
63	VCC	-	SYSTEM POWER
64	S DATA	OUT	SERIAL DTA OUTPUT for SERVO CPU
65	LCM3	OUT	LOADING MOTOR DRIVE (3)
66	PAUSE	OUT	CAPSTAN MOTOR CONTROL (PAUSE: L)
67	CTL CLOCK	IN	INDEX CONTROL CLOCK INPUT
68	LCM2	OUT	LOADING MOTOR DRIVE (2)
69	CAPFG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	LCM1	OUT	LOADING MOTOR DRIVE (1)
71	D. FF	IN	DRUM ROTATION DETECT/ REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER (FOR ANALOG)
73	SCR IN	-	NC
74	PROTECT	IN	SWD5V/12V DETECT
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	ND (L)	IN	NORMAL AUDIO DETECT (NORMAL AUDIO: L)
78	IF AGC	IN	IF AGC DETECT
79	A. LVL. R	IN	AUDIO INDICATOR LEVEL INPUT (R ch)
80	A. LVL. L	IN	AUDIO INDICATOR LEVEL INPUT (L ch)

Table 6-1-2 SYSCON CPU pin function (2/2)



JVC

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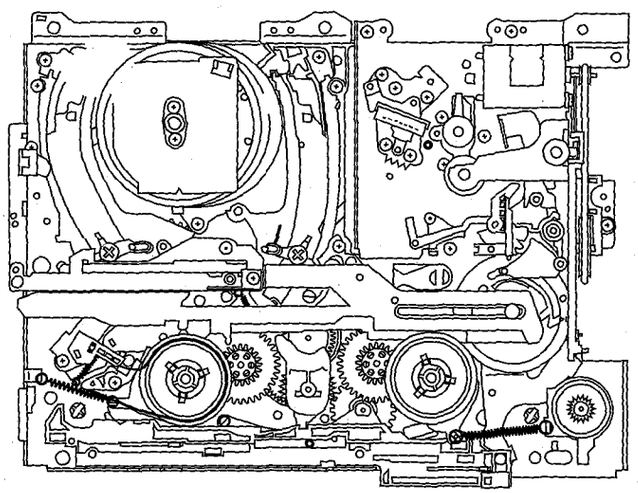
JVC

SERVICE MANUAL

MECHANISM ASSEMBLY

PMC0011A-E/PMC0011A-M
PMC0013A-E/PMC0013A-E
PMC0014A-E/PMC0014A-M
PMC0015A-M

TYPE 80L



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No. 82595
May 1997

SECTION 1
ADJUSTMENT

1.1 PREPARATION

1.1.1 Precautions

(1) Disconnect VCR from AC power before soldering.
(2) Avoid imparting stress to wires when disengaging connectors.
(3) Determine and correct the cause of difficulty before proceeding to adjustments.Do not disturb settings unnecessarily.
(4) Use care not to damage tabs,claws,etc during repairs.
(5) Install the cassette housing assembly only when the mechanism is in the MECHANISM ASSEMBLING MODE position.
(6) When installing the Front panel assembly,be sure to engage the housing door with the door opener of the cassette housing assembly.
If this is omitted,the cassette door will not open at Eject and the cassette can not be removed.

1.1.2 Check without cassette housing assembly.

Mechanism operations can be observed easily by removing the cassette housing assembly. Use the MECHANISM SERVICE MODE.

1.1.3 Manual removal of loaded tape

When the deck enters the emergency mode with cassette tape loaded and it can not be ejected by pressing the EJECT button,take out of the cassette tape according to the following procedure.

(1) Disconnect the power cord from AC outlet then take out the Top cover and Front panel assembly.
(2) Turn the loading motor on the Main deck assembly by hand in the unloading direction to where the pole base assembly (supply and take-up) is positioned below the cassette tape.At that time, pay careful attention to the tape not to get soiled with grease.
(3) Take out 4 screws of the cassette housing assembly.
(4) Remove the cassette housing with slackened tape and guard panel of cassette.
(5) Wind up the tape by turning the reel hub(either supply or take-up side for convenience) from the bottom of the cassette,and remove the cassette tape.

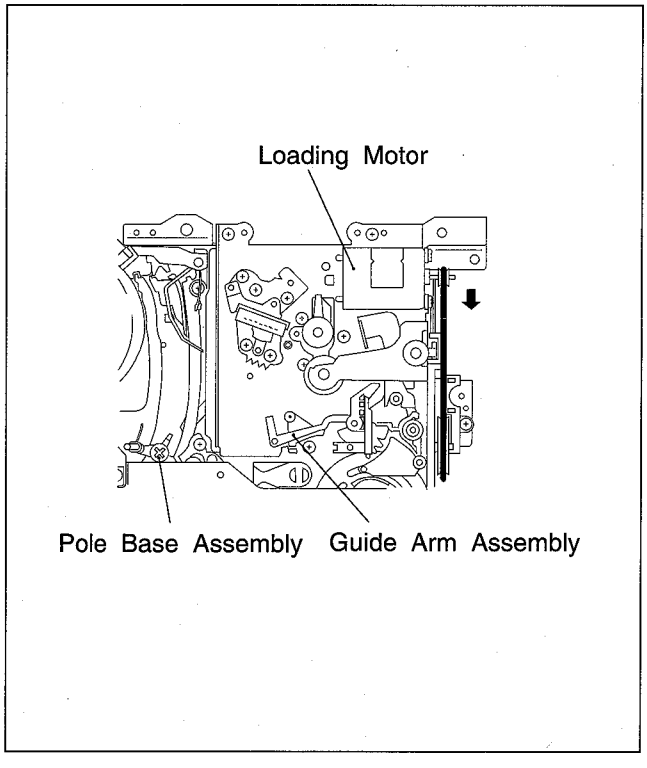


Fig. 1-1-1

1.1.4 Test Equipment

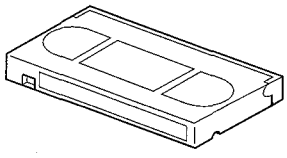
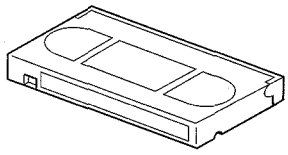
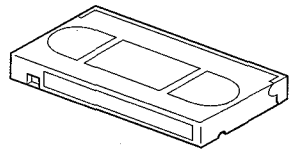
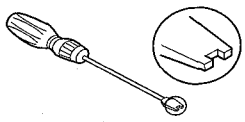
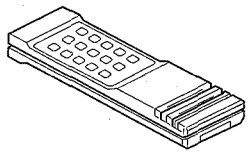
Alignment tape (SP) NTSC:MHP PAL:MHPE	Alignment tape (EP,LP) NTSC(EP):MHP-L PAL(LP):MHPE-L	Back tension cassette gauge PUJ48076-2	A/C head positioning tool PTU94010
			
Roller driver PTU94002	Presetting unit PTU94008	Grease KYODO-SH-P	
			

Table 1-1-1 Test equipment

1.2 MAIN MECHANISM PARTS

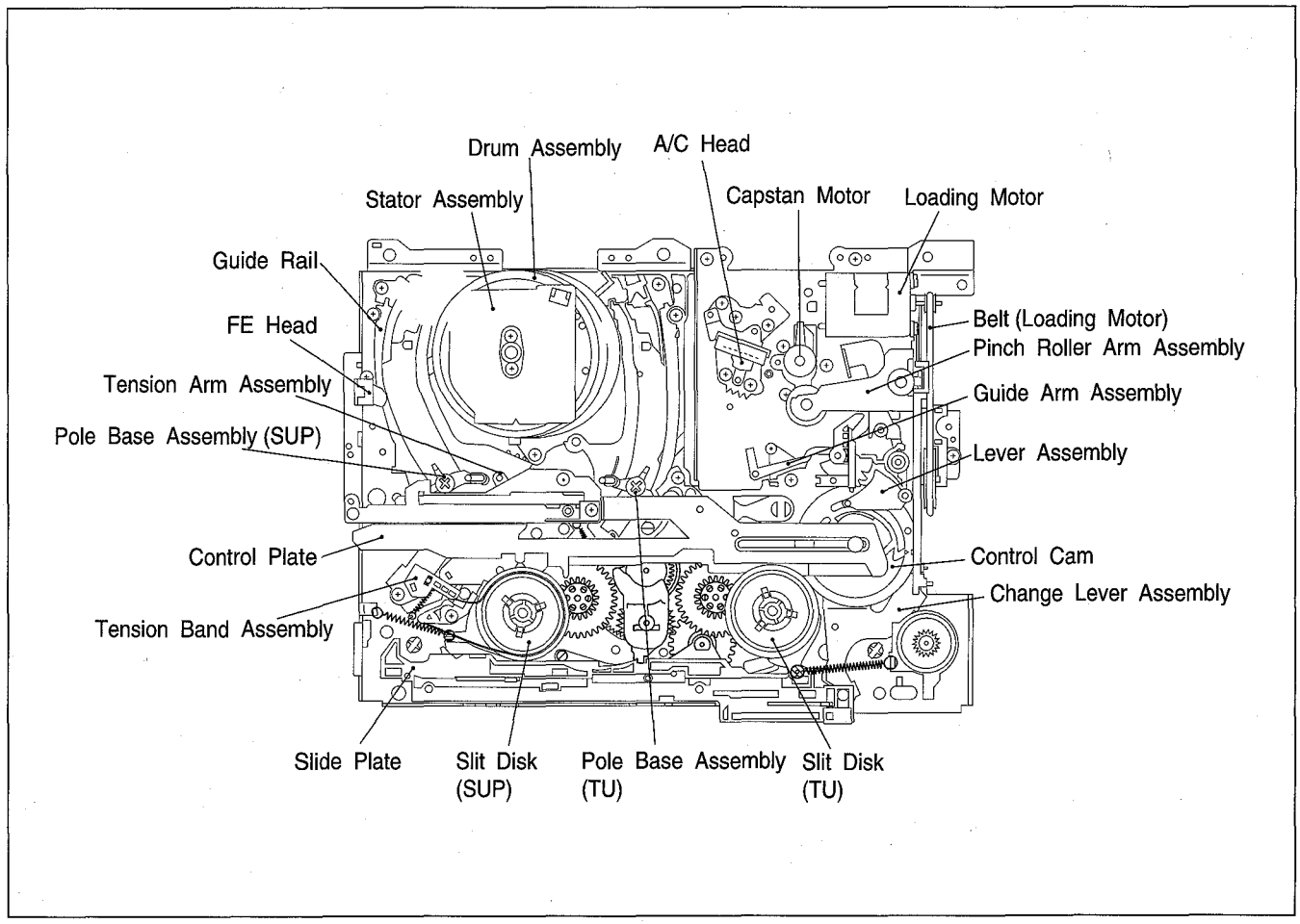


Fig. 1-2-1 Top view of main deck

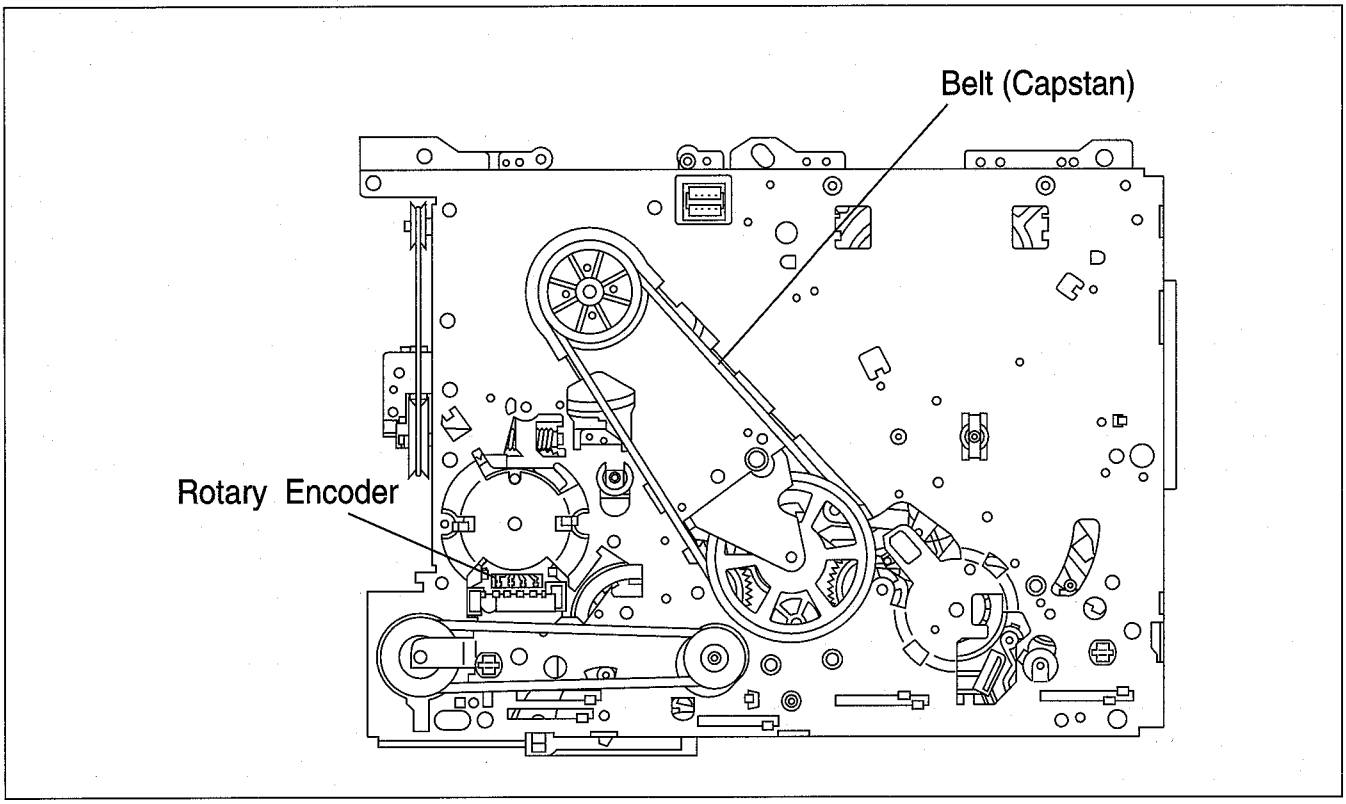


Fig. 1-2-2 Bottom view of main deck

1.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable,but usually not feasible in practice.Therefore,perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads,tape guides and brush can detract from playback picture quality and in extreme cases,even damage the tape.For cleaning,use a finemesh cotton cloth(about the texture of a white dress-shirt) moistened in alcohol. It is recommended to also clean thetape tension posts and capstan.

- To clean the video heads,press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke,as this may damage the heads.

1.2.2 Lubrication

Oil and grease do not normally require periodic replenishing. Apply only when replacing lubricated parts(also clean and replace lubrication of mating parts if soiled). For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly. Before oiling,clean with alcohol. Apply one or two drops of oil. Avoid excess oil.

1. Table 1-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KYODO-SH-P

Table 1-2-1

2. Grease is not required for a replacement cassette housing assembly,as this has been applied at the factory.

NOTE : *Stir grease that has been stored for an extended period.*

1.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage.Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

1.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★ ○	○
	A/C head	★ ○	★ ○
	Lower drum motor assembly	★	★ ○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Slit disk (supply, take-up)		○
	Clutch unit (supply, take-up)		○
	Worm gear assembly		○
	Control plate		○
	Slide plate		○
Other	Brush assembly	★ ○	★ ○
	Tension band assembly	○	○
	Rotary encoder		○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 1-3-1

1.4 DISASSEMBLY/ASSEMBLY PROCEDURE OF MECHANISM

1.4.1 Precaution before disassembling mechanism

This mechanism has an exclusive operation mode provided for disassembling and installation of the mechanism (MECHANISM ASSEMBLING MODE), and it is suggested to set the mechanism to this mode before disassembly and installation.The exclusive mechanism operation mode is not generally used and becomes available by manual setting only. Then this procedure starts with the condition that the cabinet parts,cassette housing assembly and PRE/REC board assembly have been removed.

1.4.2 How to set the exclusive mechanism operation mode (MECHANISM ASSEMBLING MODE)

(1) Turn the loading motor belt by hand.
(2) Confirm that the hole of the control cam are aligned to the deck hole as shown in Fig.1-4-1.

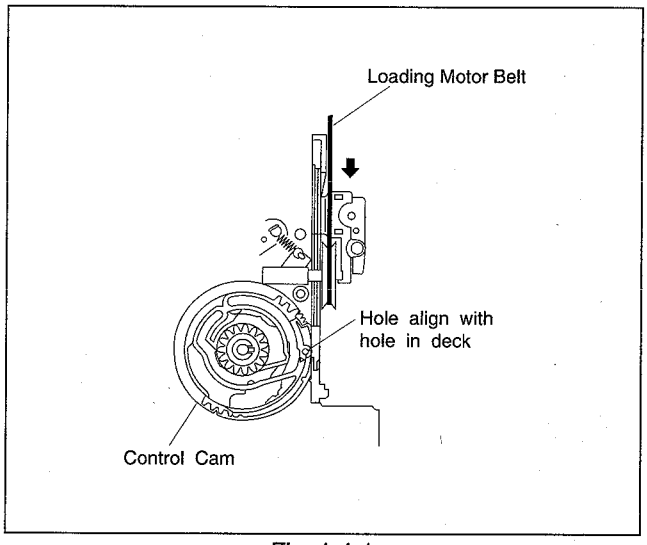


Fig. 1-4-1

1.5 MAIN PARTS REPLACEMENT OF MECHANISM

1.5.1 Pinch Roller Arm Assembly

(1) Remove the slit washer.
(2) Tilt up the pinch roller assembly in direction of arrow.

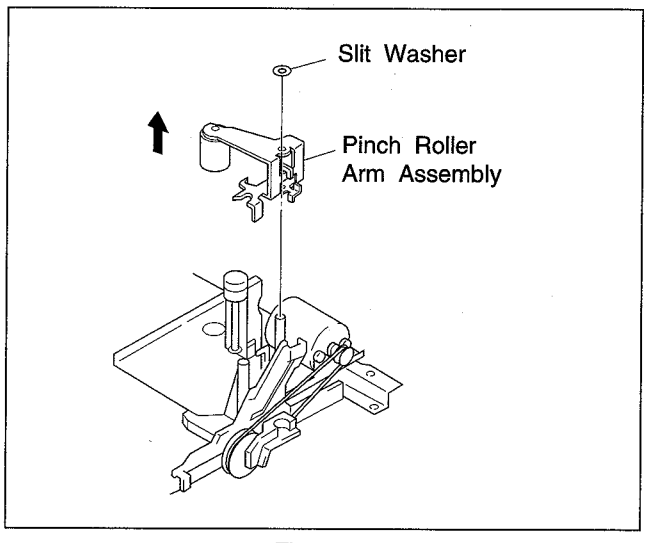


Fig.1-5-1

1.5.2 A/C Head

1. Removal

(1) Take out 2 screws (A).

(2) Remove the A/C head with head base.

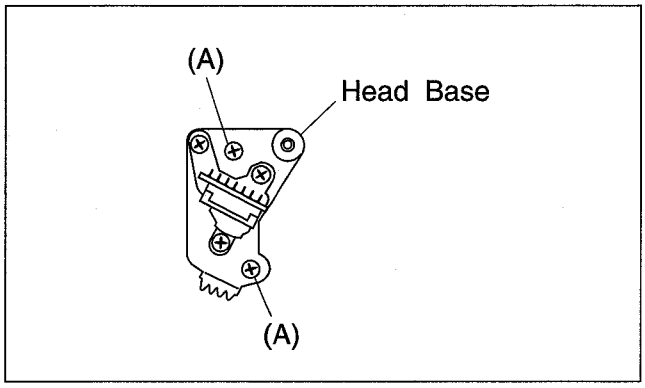


Fig.1-5-2

(3) When replacing the A/C head only,remove 3 screws (B), use care not to misplace the 3 springs.

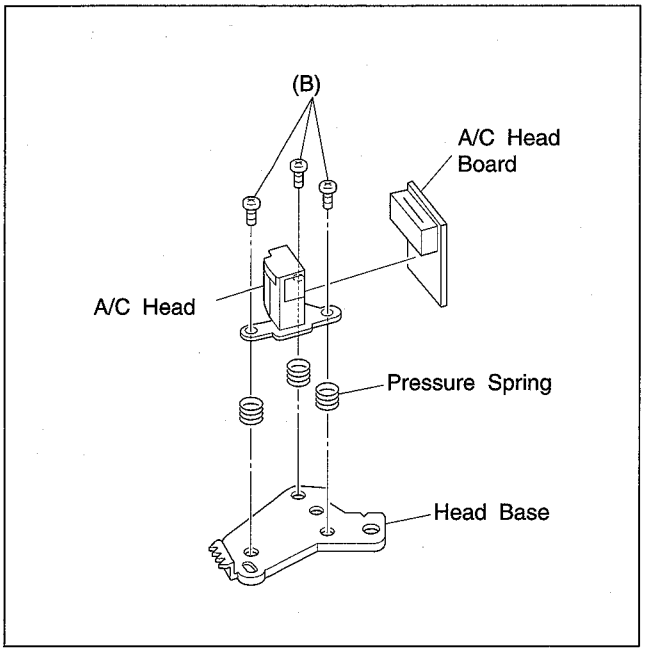
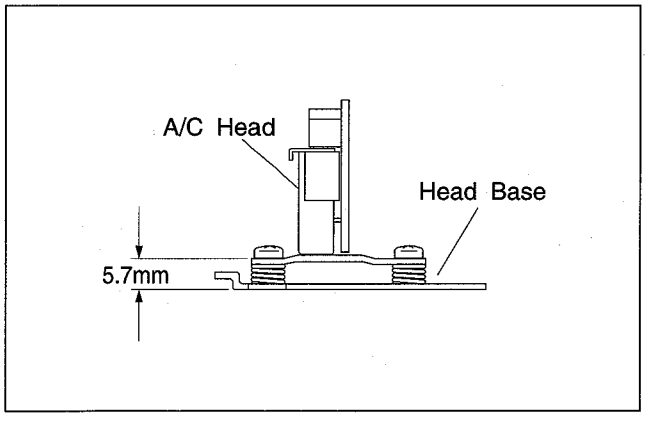


Fig.1-5-3

2. Installation

(1) Temporarily set A/C head height as indicated in Fig. 1-5-4.



NOTES:

- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

1.5.3 Pinch Plate

1. Removal

(1) Disengage 2 claws, then remove the pinch plate.

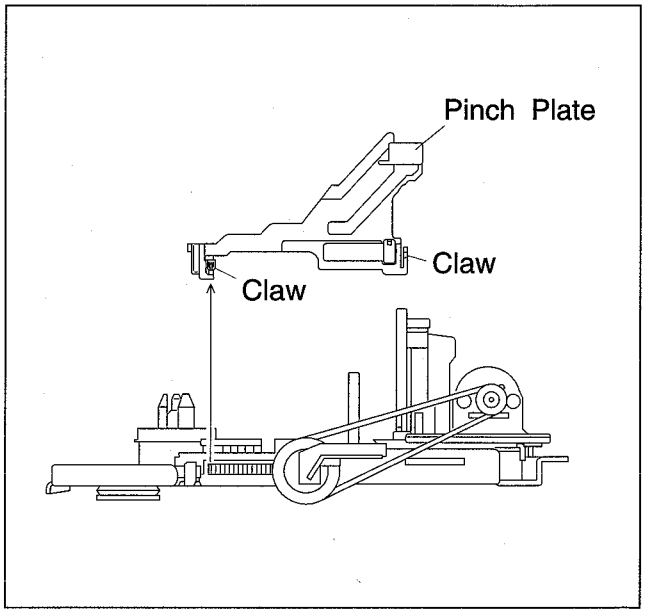


Fig.1-5-5

2. Installation

(1) When installing pinch plate,align rack of pinch plate and triangle mark of control cam as indicated in Fig.1-5-6.

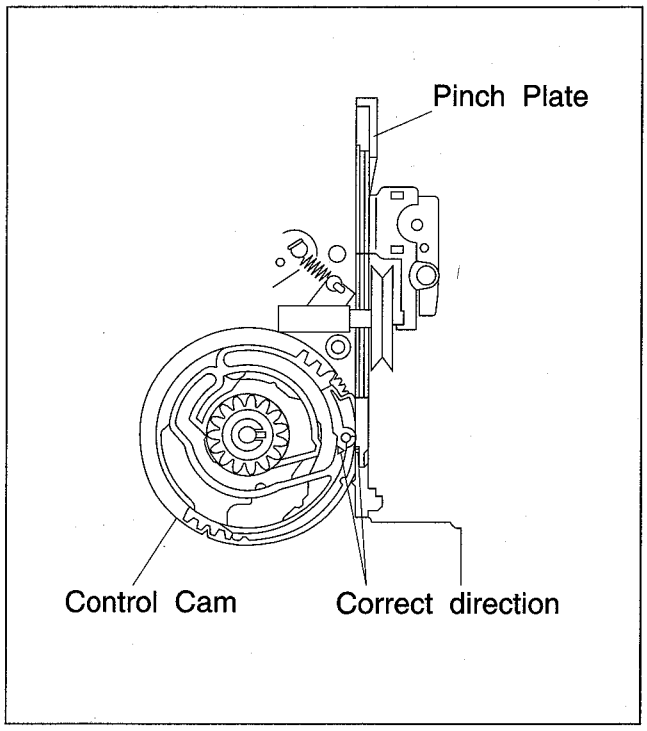


Fig. 1-5-6

1.5.4 Loading Motor

(1) Disengage the belt between loading motor and worm gear.
(2) Take out 2 screws (A) then remove the loading motor.

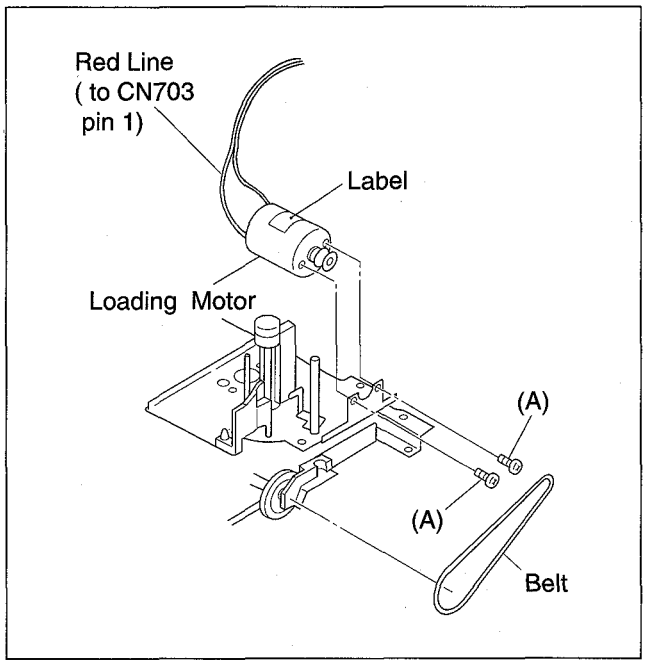


Fig.1-5-7

1.5.5 Lever Assmebly,Sub Deck Assembly,Capstan Motor

(1) Take out 1 slit washer,then remove the lever assembly.
(2) Disengage the belt(capstan motor) from bottom of mechanism assembly first as indicated in Fig.1-5-10.
(3) Take out 2 screws (A), 1 screw (B) and remove the sub deck assembly as indicated in Fig.1-5-8.
(4) Take out 3 screws (C) and remove the capstan motor from the sub deck assembly as indicated in Fig.1-5-9.

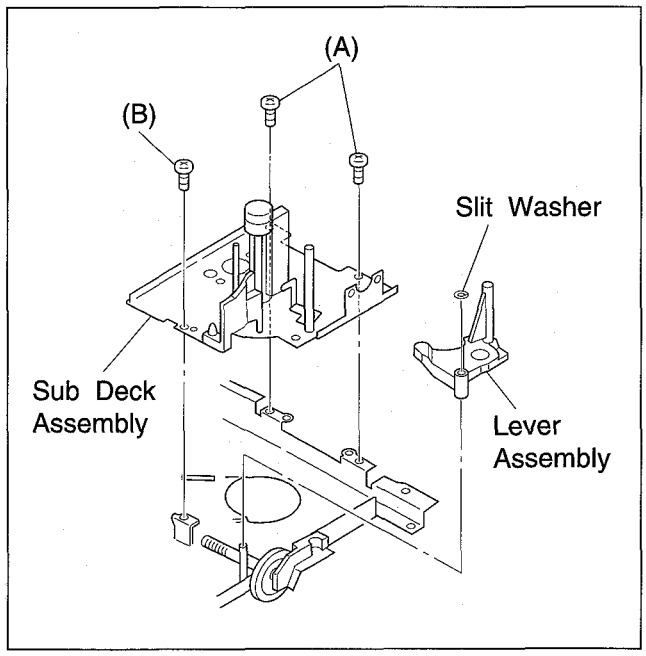


Fig.1-5-8

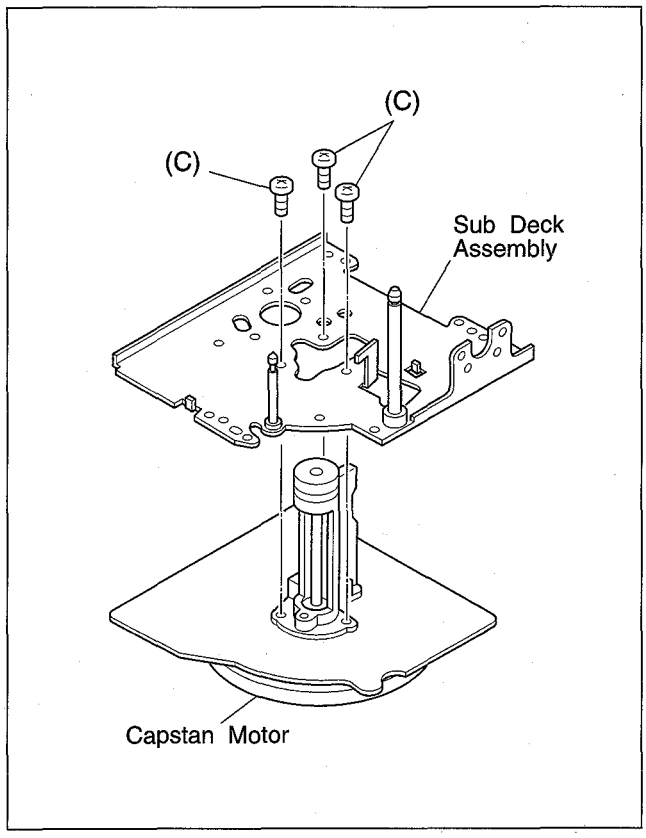


Fig.1-5-9

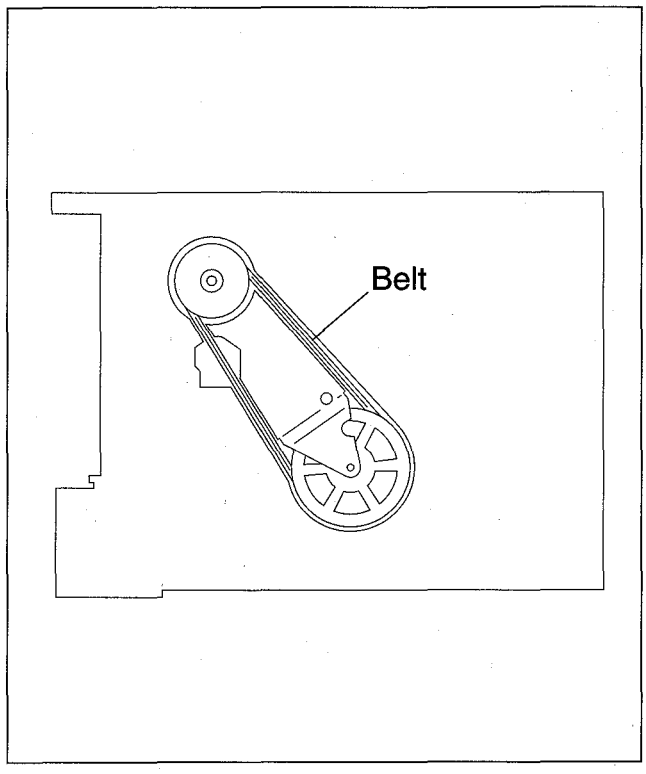


Fig.1-5-10

1.5.6 Control Bracket

(1) Take out 1 screw (A) and 1 screw (B).
(2) Remove the control bracket.

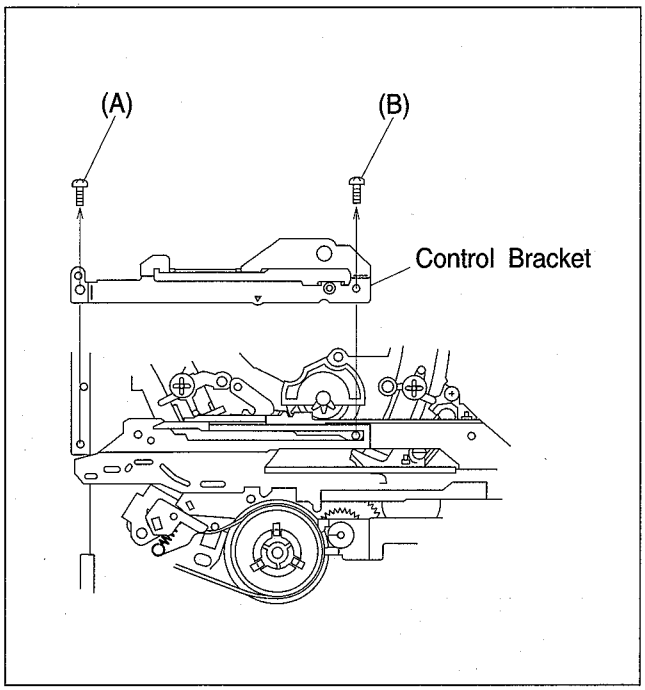


Fig.1-5-11

1.5.7 Slit disk (take-up)

(1) Take out 1 slit washer.
(2) Remove the slite disk (take-up).

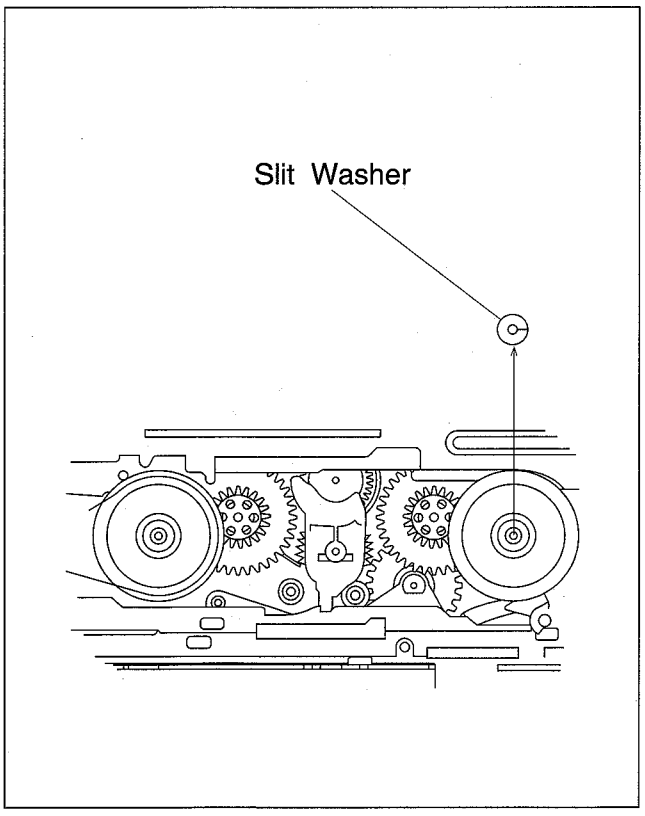


Fig.1-5-12

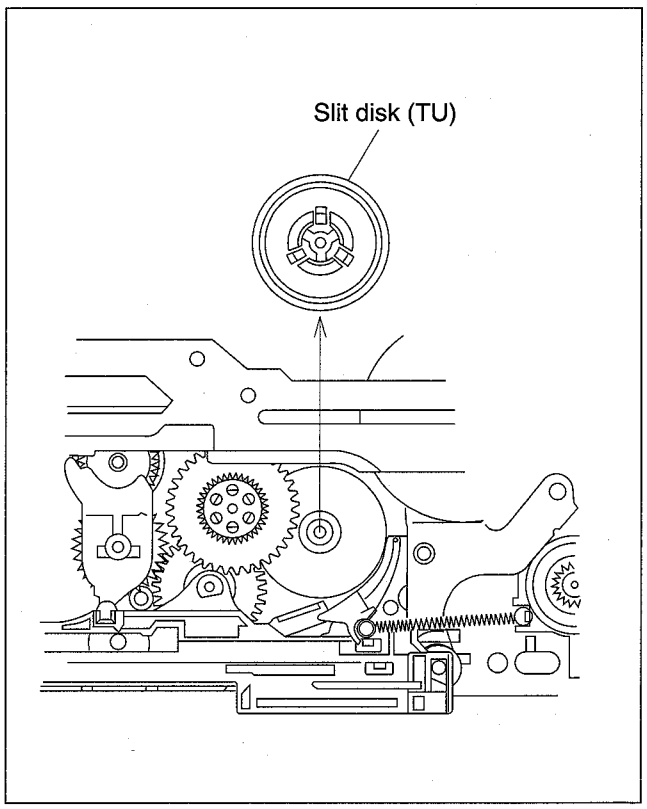


Fig.1-5-13

1.5.8 Control Plate

(1) Take out 1 slit washer.
(2) Disengage 2 claws and remove the control plate.

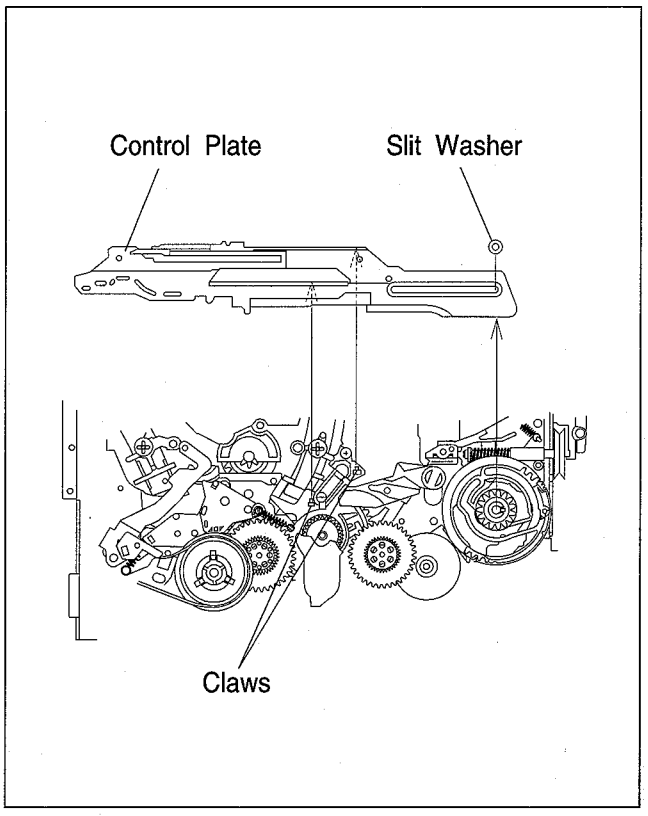


Fig.1-5-14

1.5.9 Sub Brake(take-up),Control Cam

(1) Disengage 1 spring (a) and 1 claw then remove the sub brake (take-up).
(2) Disengage 1 claw and remove the control cam.

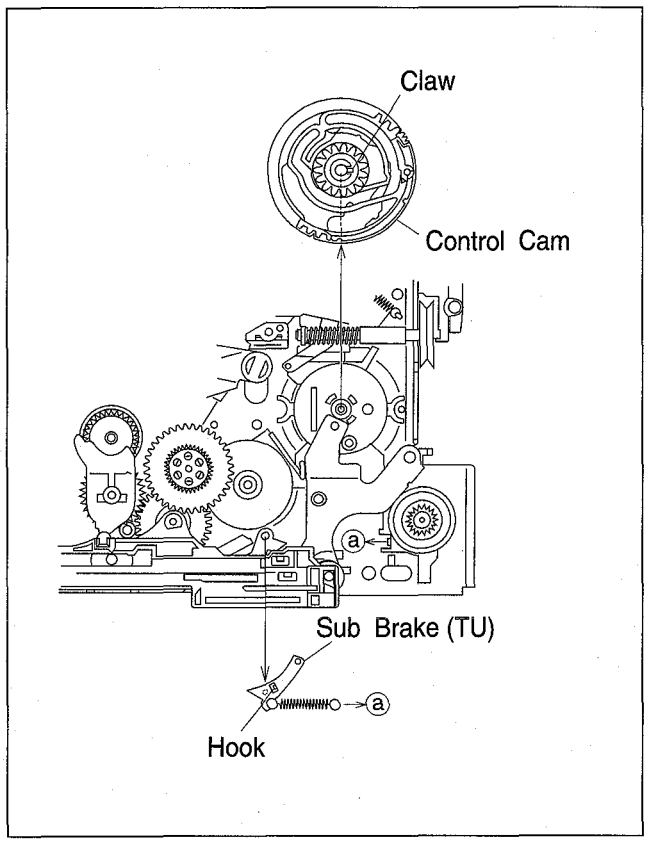


Fig.1-5-15

1.5.10 Slide Plate

(1) Disengage 7 claws from bottom of the mechanism assembly and remove the slide plate.

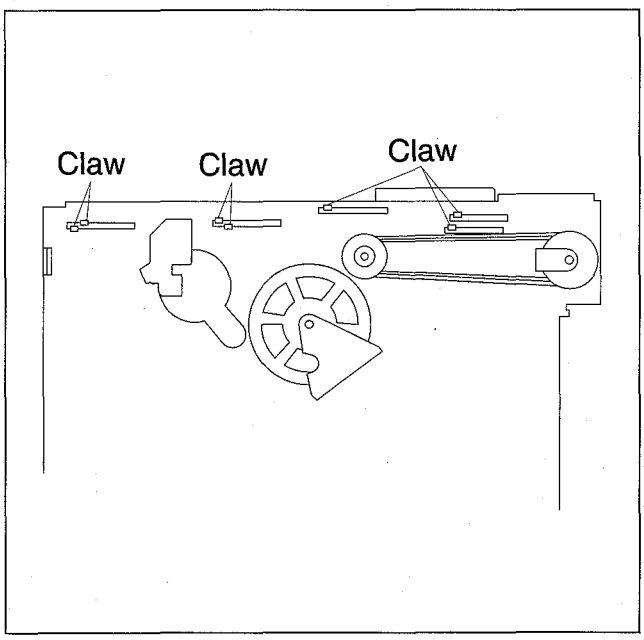


Fig. 1-5-16

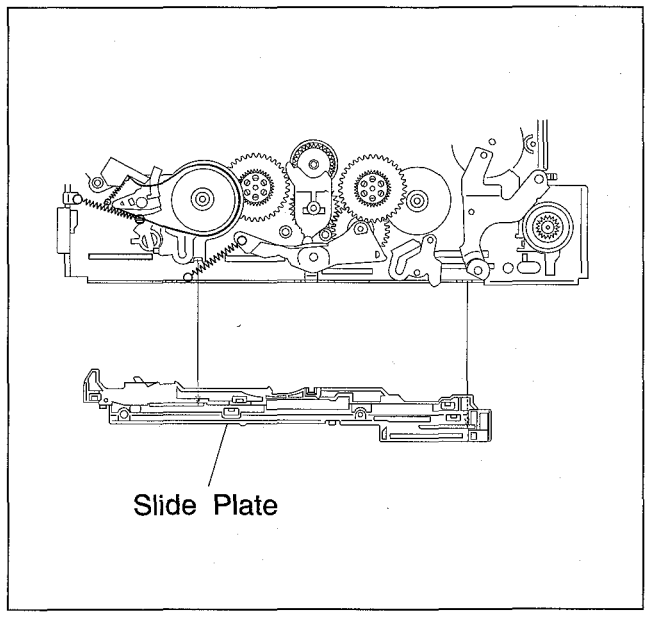


Fig. 1-5-17

1.5.11 Change Lever,Rotary Encoder

(1) Remove the change lever.
(2) Disengage 2 claws and remove the rotary encoder.

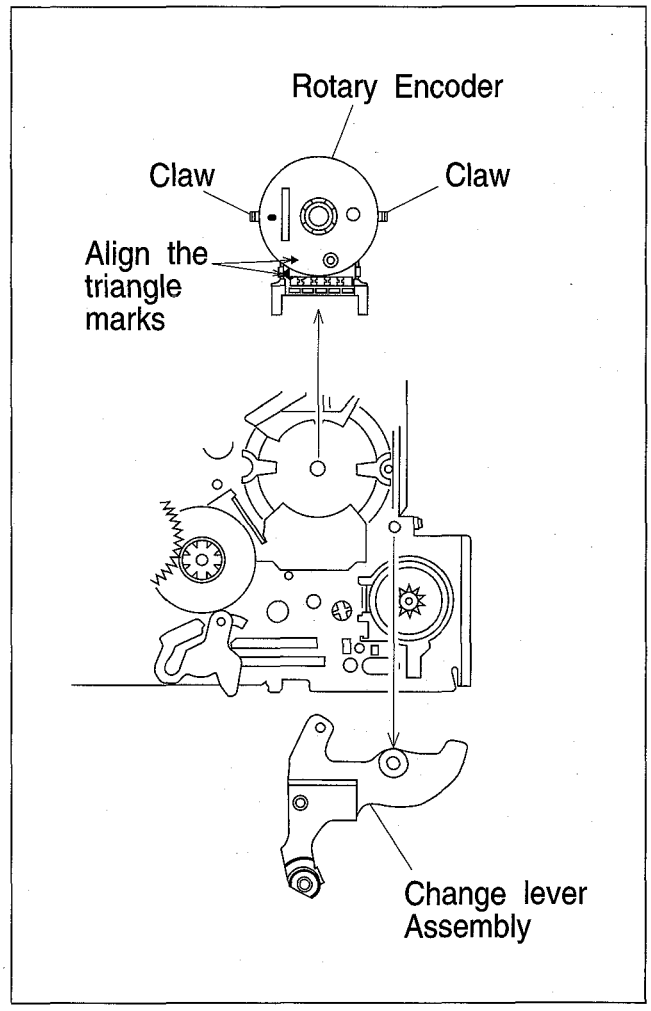


Fig. 1-5-18

1.5.12 Sub Brake (supply),Tension Band Assembly, Tension Arm Assembly, Take-up Lever Assembly,Slit Disk(supply)

(1) Disengage 1 spring ⓐ.
(2) Disengage 1 claw and remove the sub brake (supply).
(3) Take out 1 spring ⓒ and slit washer then disengage 1 claw.
(4) Remove the tension arm assembly with tension band assembly.
(5) Remove the take-up lever assembly.
(6) Take out 1 slit washer then remove the slit disk(supply).

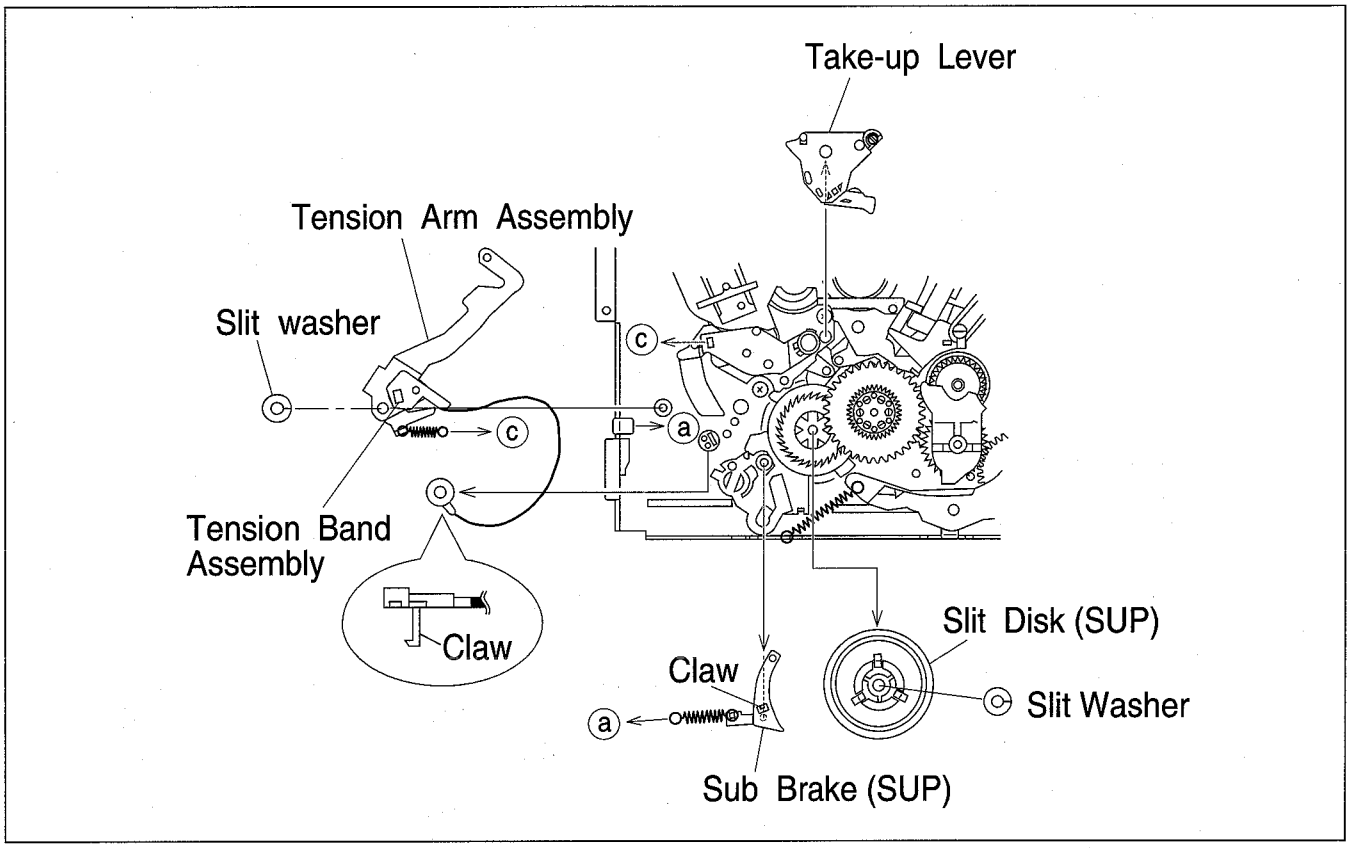


Fig. 1-5-19

1.5.13 Take-up Head,Tension Arm Lever

(1) Remove the take-up head and tension arm lever.

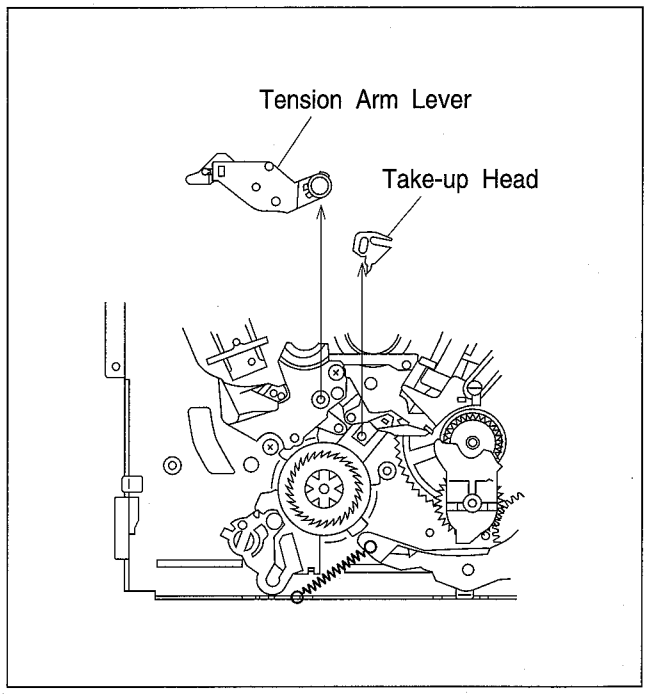


Fig.1-5-20

1.5.14 Guide Rail

(1) Take out 5 screws Ⓐ and 1 screw Ⓑ.
(2) Disengage 4 claws and remove the guide rail.

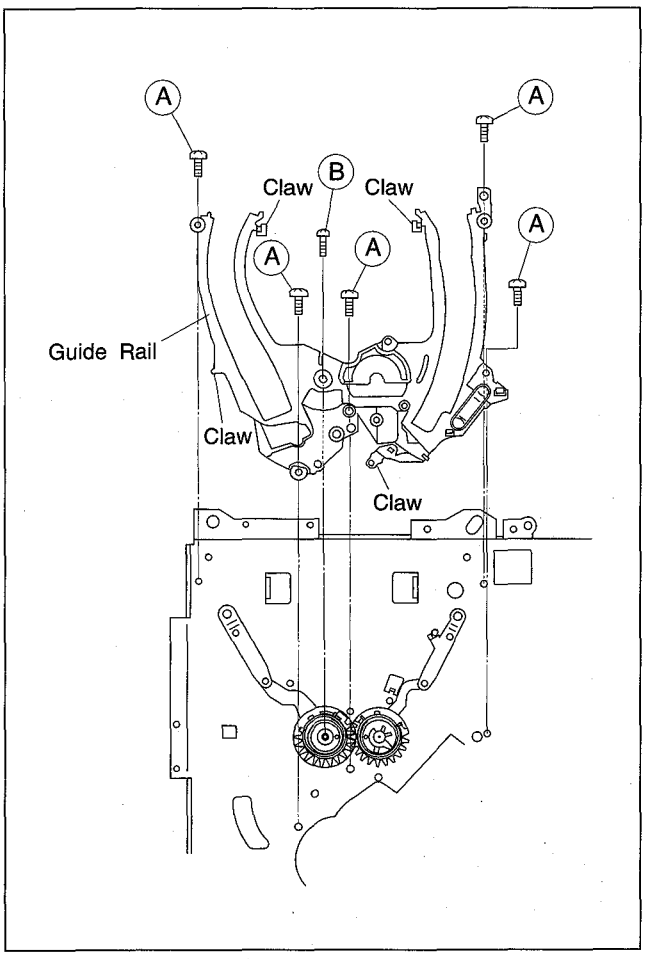


Fig. 1-5-21

1.5.15 Stator Assembly

(1) Take out 2 screws (A).
(2) Raise the stator assembly in the direction indicated by the arrow to remove it.
(3) Remove the flat cable.
(4) To reinstall,first secure the flat cable,then insert 2 screws (A).
(5) After reinstalling, be sure to perform PB switching point adjustment.

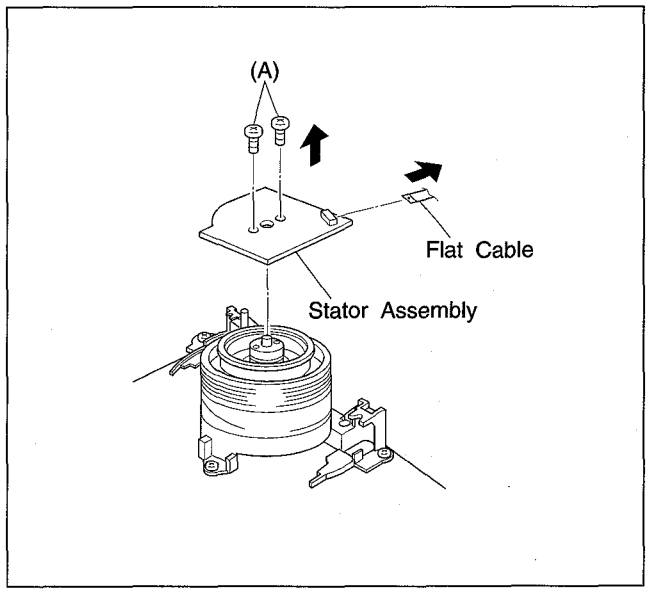


Fig. 1-5-22

NOTE : *When refitting the connector, check that the flat wire is inserted correctly.*

1.5.16 Rotor Assembly

(1) Remove the stator Assembly.
(2) Take out 2 screws (B) and remove the rotor Assembly.

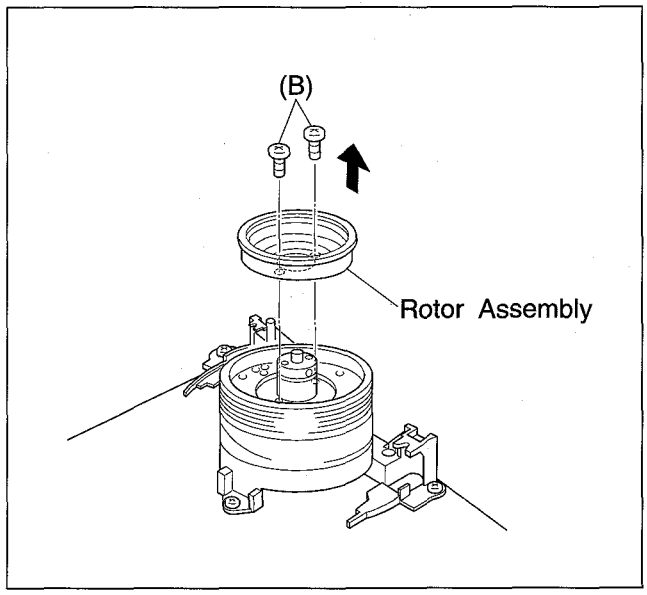


Fig.1-5-23

(3) Align the upper drum assembly and rotor assembly phase as indicated in Fig.1-5-24.
(4) Overlap holes (a) of the upper drum assembly with holes (b) of the rotor assembly and secure with 2 screws (B) as indicated in Fig.1-5-23.

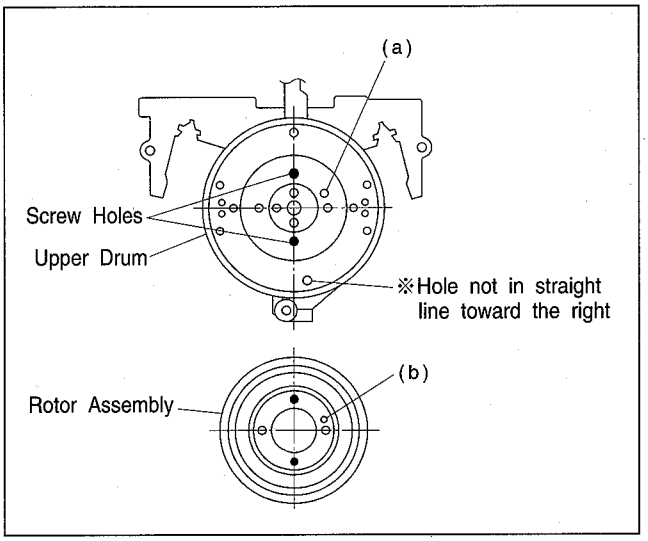


Fig. 1-5-24

1.5.17 Upper Drum Assembly

1. Removal

(1) Remove the stator assembly and rotor assembly.
(2) Use a 1.5 mm hexagonal wrench to loosen the collar assembly screw and remove the collar assembly with brush, and remove the cap.
(3) Remove the upper drum assembly and use tweezers to remove the washer.

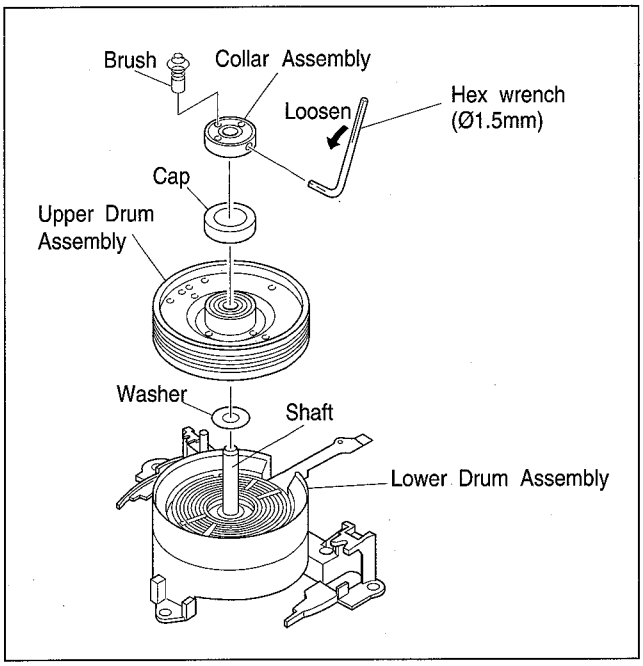


Fig. 1-5-25

NOTE : *If the Brush is replaced, do not apply the grease to the contacts.*

2. Installation

(1) Use an air brush to clean the lower drum assembly and the coil section of the new upper drum assembly.
(2) Set a new washer on the drum shaft as indicated in Fig.1-5-25.

NOTE : *Be sure to use the new washer when replace the upper drum assembly.*

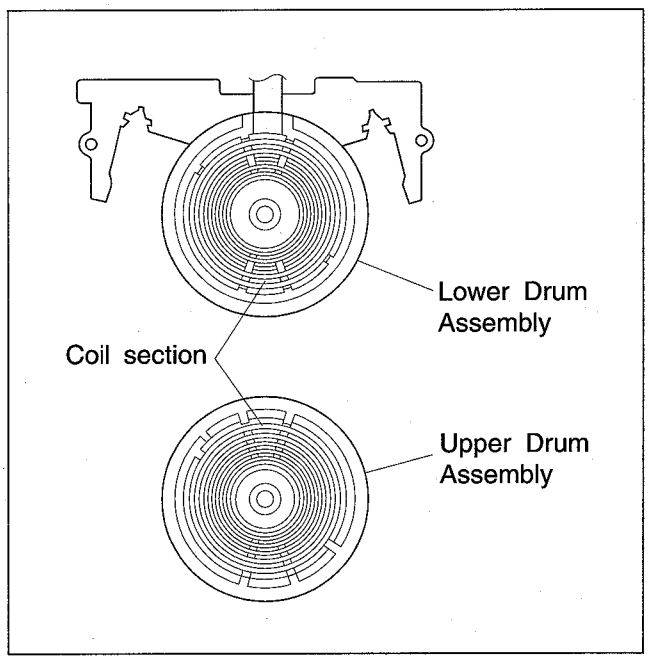


Fig.1-5-26

(3) Note the top and bottom of the collar assembly and determine the position as indicated in Fig.1-5-27.

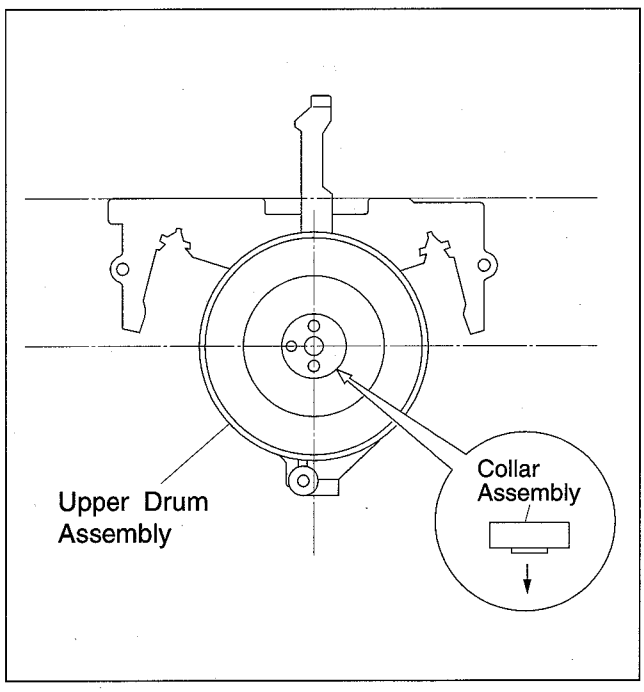


Fig.1-5-27

(4) While pressing the collar assembly evenly from above with your fingertips,secure the hexagonal screw.

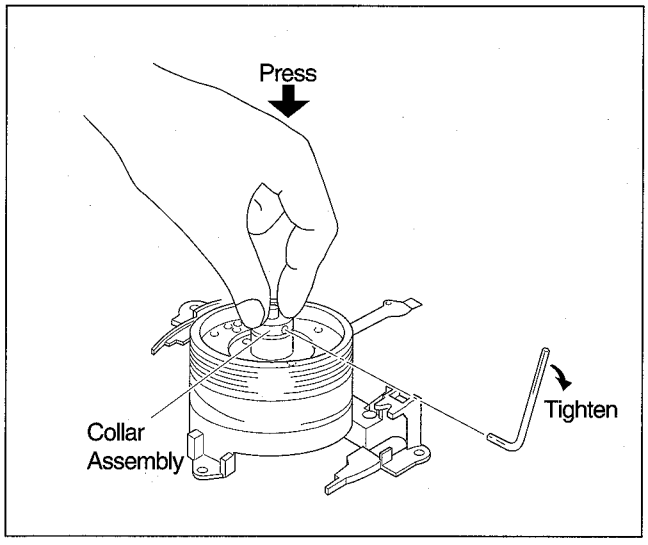


Fig.1-5-28

(5) After installing,gently turn the upper drum by hand and confirm normal rotation.
(6) Install the rotor assembly and stator assembly.
(7) Clean the upper and lower drum assemblies and perform the following adjustments;
- PB switching point adjustment
- Slow tracking preset adjustment
- Interchangeability adjustment (be sure to check EP or LP mode)

1.6 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

1.6.1 Precaution

The rotary encoder and syscon circuit are closely interrelated.Therefore,the rotary encoder and control cam conection determines the operations of mechanical parts such as plates,gears,brakes,etc.Correct positioning of these parts is essential for smooth tape loading and mechanical operations.

1.6.2 Loadidg Arm Assemby (supply,take-up)

(1) Install the supply loading arm assembly and the take-up loading arm assembly so that their positioning markings on the respective gear face each other and the holes of their arms correspond to the holes on the main deck assembly respectively.
(2) After setting the guide rails,engage the pole base assemblies with the tip of the loading arms respectively. Then,enter the mechanism into the unloading mode to return the pole base assemblies to the front position.
(3) Reassemble the peripheral parts of the guide rail to its original position.

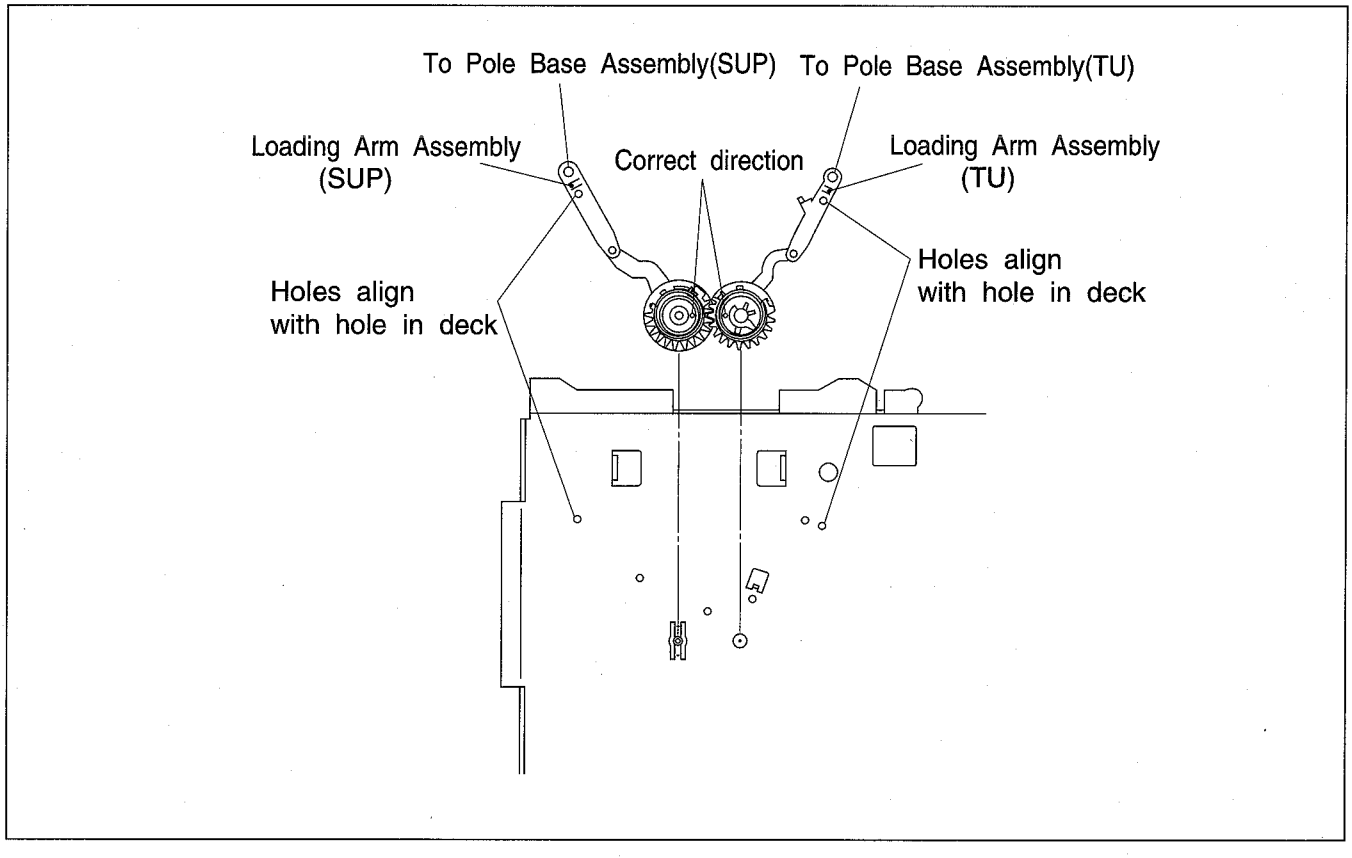


Fig. 1-6-1

1.6.3 Rotary Encoder,Change Lever,Control Cam

(1) When reinstalling the rotary encoder,adjust its position so as to fit the triangle marks each other and push it deep untill it is locked by the pawls.
(2) When reinstalling the change lever,set it so as to make its positioning hole correspond to the hole of the main deck assembly.
(3) When re-engaging the control cam,lower the capstan brake assembly while setting it so as to make its positioning hole correspond to the hole of the main deck assembly.

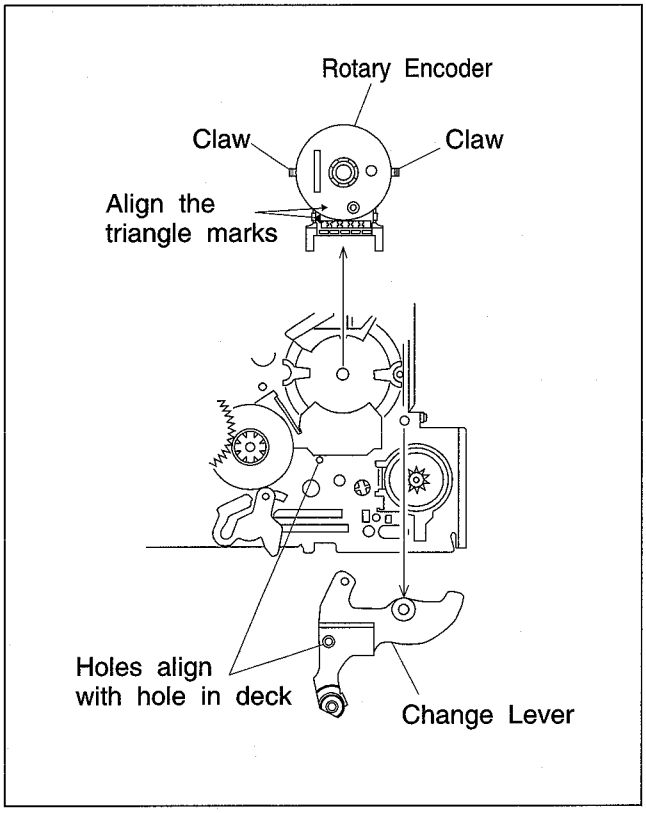


Fig. 1-6-2

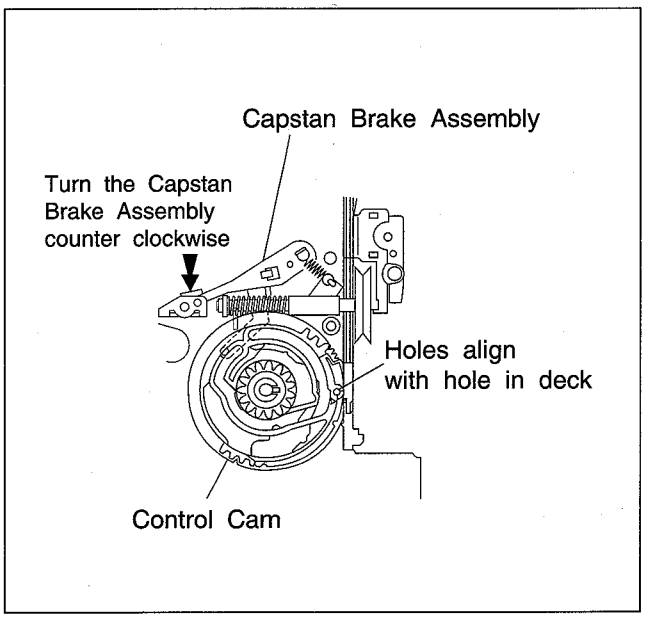


Fig. 1-6-3

1.6.4 Slide Plate

(1) Lower both the main brake assemblies (supply and take-up) untill they touch the edge of the main deck assembly while reinstalling the slide plate so as to make the respective positioning holes of the main brake assemblies correspond to the holes on the main deck assembly.

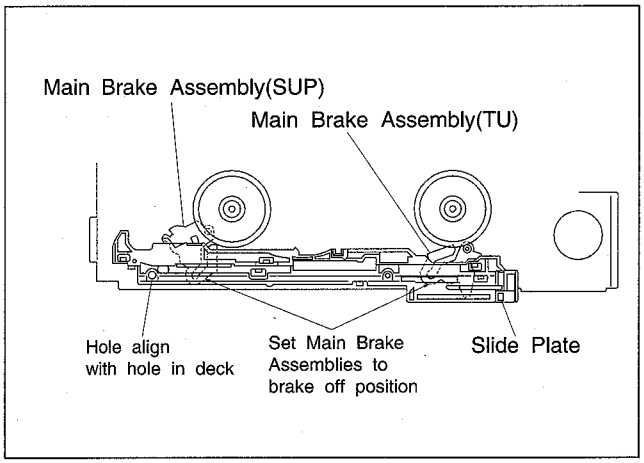


Fig.1-6-4

1.6.5 Control Plate

(1) Reinstall the control plate so as to set the two positioning holes of it on the holes on the main deck assembly respectively and to set the positioning hole of the take-up lever on the hole of the main deck at the same time. When adjusting the hole position of the take-up lever,use a pair of tweezers to hold and move it since it is pulled by a tension spring.
(2) After reinstalling the control plate,fix it with the slit washer,control bracket-1 and -2.

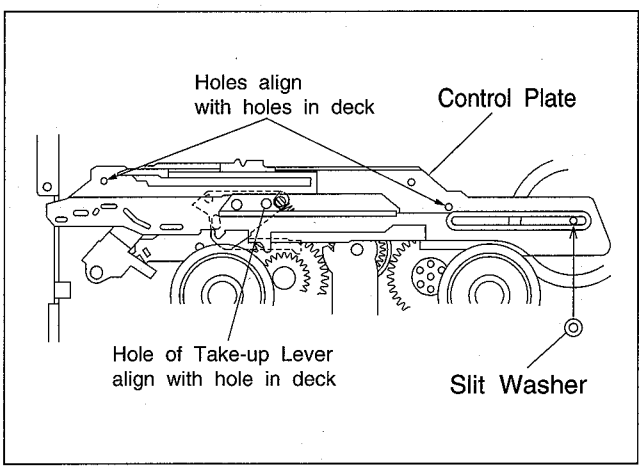


Fig. 1-6-5

1.7 TAPE INTERCHANGEABILITY ADJUSTMENT

NOTE : • *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components(A/C head,upper/lower drum assembly,pole base assembly,etc).*
• *Before using costly alignment tape,use a spare tape and confirm correct operation of the tape transport.*

1.7.1 Tape pattern

(1) Connect the oscilloscope to PB FM on the Main board.Use D.FF on the Main board as a trigger.
(2) Playback the SP stairstep portion of the alignment tape [MHP, MHPE]. Confirm that the FM waveform appears as indicated in Fig.1-7-1.
(3) Set the manual tracking position by pressing the ▮/▮▮ button on the remote controller or TV PROG "-" and "+" buttons simultaneously.
(4) Operate the tracking adjustment (press the TV PROG buttons during playback) and set for maximum playback FM waveform.
(5) By operating the TV PROG button,vary the FM waveform from maximum to minimum and vice versa to confirm that the waveform varies nearly in a flat shape as shown in Fig.1-7-1.
(6) When the FM waveform does not remain flat during this process,first slightly loosen the set screw located at the bottom of the guide rollers.Using the guide roller adjustment tool (Roller driver) ,adjust the supply and take-up guide rollers (refer to Fig.1-7-2) to obtain the correct waveform as indicated in Fig.1-7-3.
(7) By pressing the TV PROG buttons several times,vary the FM waveform output from maximum to minimum (and vice versa) gradually,and confirm that the variation proceeds in flat shape, as shown in Fig.1-7-3.
(8) Next playback the EP or LP stairstep portion of the alignment tape [MHP-L, MHPE-L] and adjust the tracking control from maximum to minimum the FM waveform,confirm that FM waveform variation is always flat.
(9) Record the signal and play it back in both of the SP and EP, LP mode,confirm that the FM waveform is flat in both mode.
(10) After adjustments,tighten the set screw of the guide rollers.
(11) Confirm that the tape wrinking does not occur at the roller upper or lower limits as indicated in Fig.1-7-4.

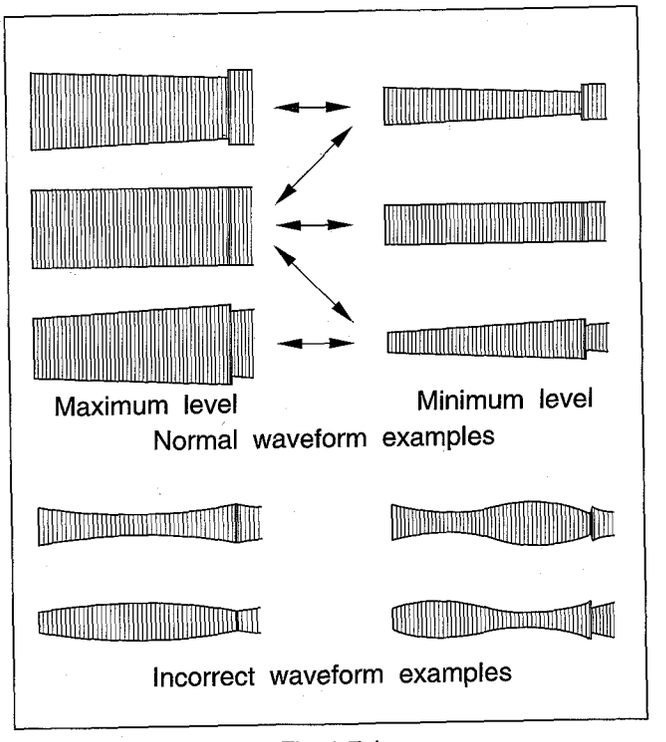


Fig. 1-7-1

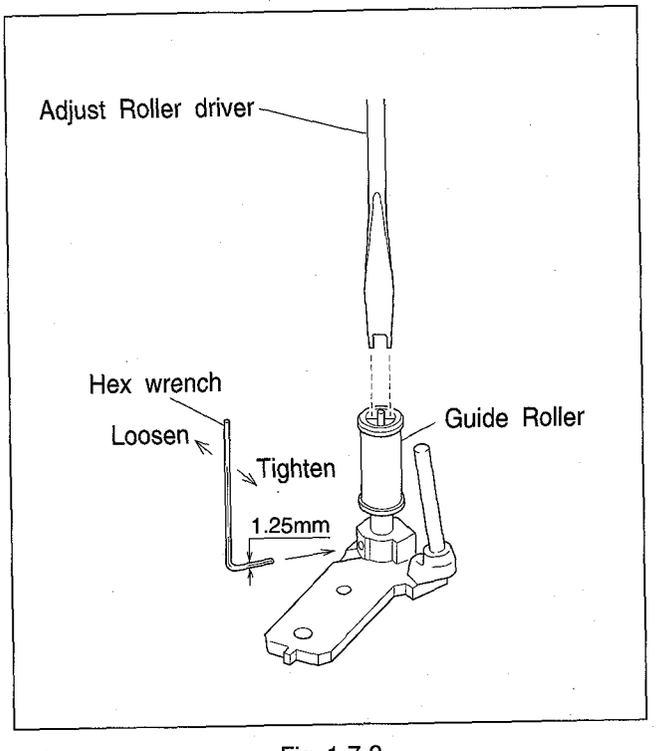


Fig. 1-7-2

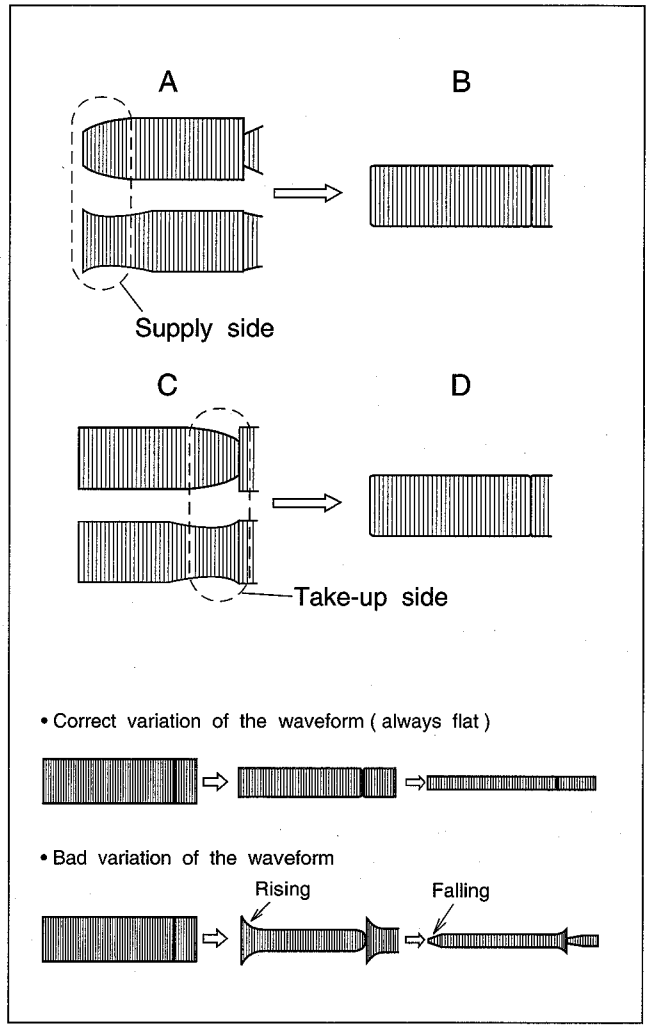


Fig. 1-7-3

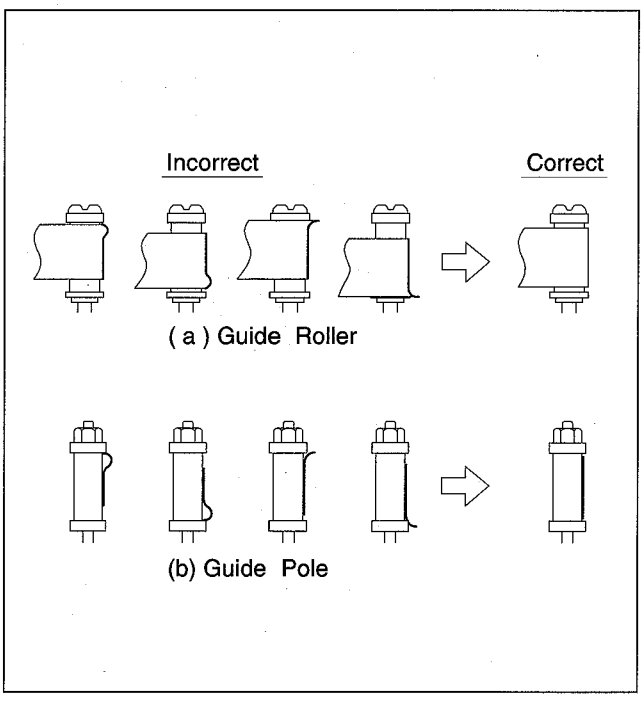


Fig. 1-7-4

1.7.2 A/C head height & azimuth

NOTE : • *Temporarily set A/C head height as indicated in Fig. 1-5-4.*
• *Use spare tape to check the transport and confirm the tape is not scratched or damaged.*

1. Tilt

(1) Use spare tape and set for playback.
(2) Turn screw (3) clockwise to where the tape curls just slightly at the TU guide pole bottom flange as shown in Fig.1-7-5.
(3) Then slowly turn screw (3) counterclockwise to where the curling ceases.

2. Height

(1) Connect CH-1 of a dual trace oscilloscope to Audio Out.
(2) Connect CH-2 to CTL PULSE of the Main board assembly and use the ALT mode.
(3) Playback the SP stairstep portion of the alignment tape [MHP, MHPE].
(4) Adjust screws (1),(2) and (3) for maximum audio output and control pulse level.

3. Azimuth

(1) Connect the oscilloscope to Audio Out.
(2) Playback the SP stairstep portion of the alignment tape [MHP, MHPE].
(3) Adjust screw (2) so that the audio output is both maximum and with minimum fluctuation.

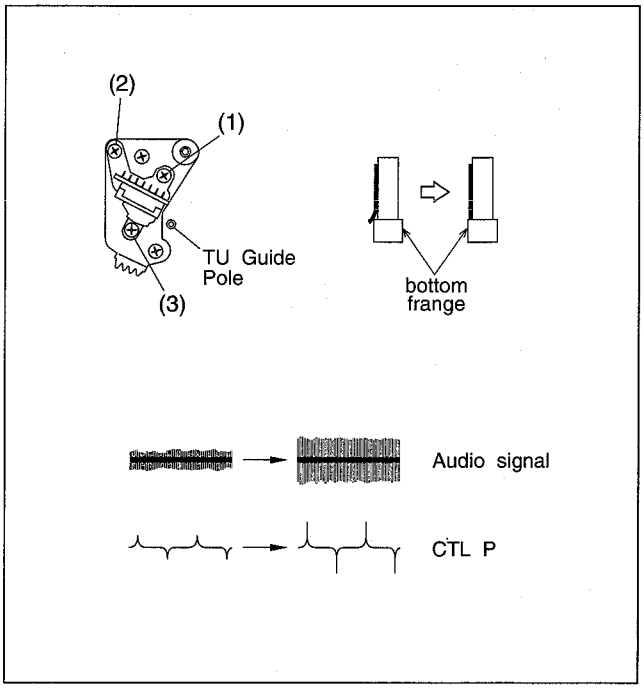


Fig. 1-7-5

1.7.3 A/C head phase(X-value)

(1) Connect the oscilloscope to PB FM on the MAIN board.Use D.FF on the MAIN board as a trigger.
(2) Playback the SP stairstep portion of the alignment tape [MHP, MHPE].
(3) Set the neutral manual tracking position by pressing the ▮/▮▮ button on the remote controller or TV PROG "-" and "+" buttons simultaneously.
(4) If adjustment is required,slightly loosen screws (4) and (5). Set A/C head positioning tool on the A/C head adjusting boss as indicated in Fig.1-7-6.
(5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig.1-7-7.
(6) Tighten screw (5). Remove the tool and tighten screw (4).
(7) Eject the SP alighnment tape [MHP, MHPE] and then re-insert the EP or LP alignment tape [MHP-L, MHPE-L].
(8) Playback the EP or LP stairstep portion of the alignment tape [MHP-L, MHPE-L].
(9) Set the neutral manual tracking position by pressing the ▮/▮▮ button on the remote controller or TV PROG "-" and "+" buttons simultaneously.
(10) Confirm maximum playback FM waveform output level as shown in Fig.1-7-7.
(11) If not maximum,slightly loosen the screws (4) and (5). Use the tool and adjust the head position for the nearest maximum point. Then tighten screws (4) and (5).

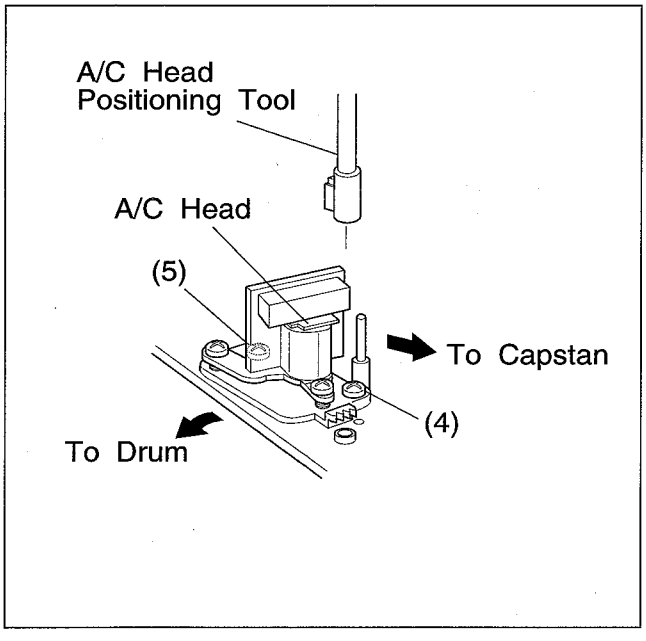


Fig. 1-7-6

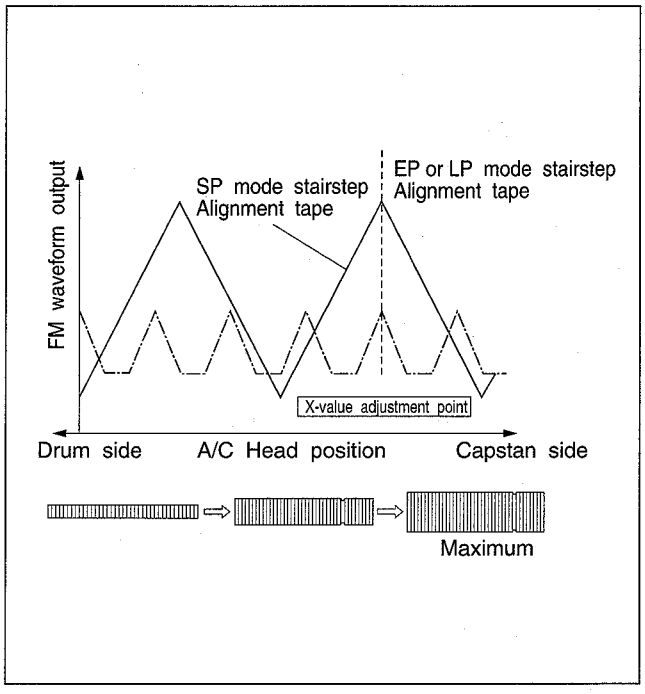


Fig. 1-7-7

1.7.4 Tension pole position

(1) Set for playback mode using MECHANISM SERVICE MODE.
(2) Turn the adjust pin so that the tension arm assembly does not touch ϕ2.5 pole on the outside.
(3) After adjustment,use the back tension cassette gauge and set for the playback mode.
(4) Confirm reading of 29 to 46 g-cm.

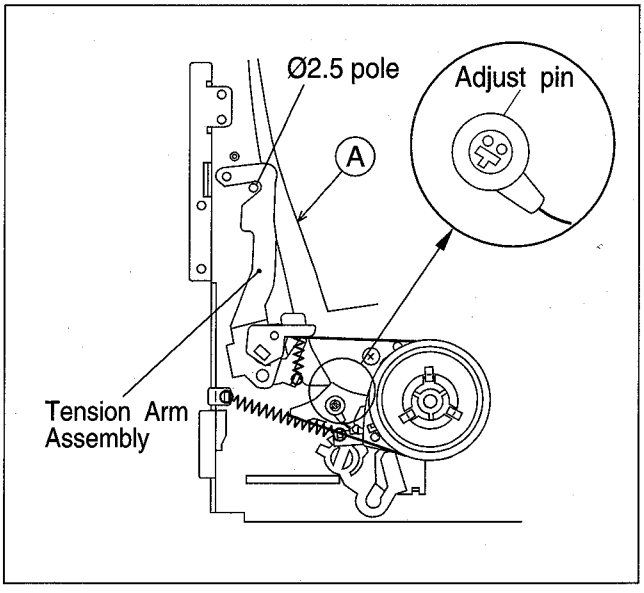


Fig. 1-7-8

SECTION 2
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

The mechanism assembly number is composed of several model numbers and the code of the country in which the deck is made in.
The parts of the mechanism assembly differ between the mechanism assembly number, and are not compatible.
Therefore it is necessary to check the mechanism assembly number, and replace parts according to the parts lists which give the corresponding parts.

The following describes how to check the mechanism assembly number.

1. To check the model number.
Read from the three digits from the left of the 9-digit number printed at the part shown in Fig. 2-1 or labeled on a sticker.
Add these three numbers at the *** of PMC00*** to obtain the model number
Consequently, the model number is PMC0011.

Example)
Printed number 11A7011427 → Assembly number PMC0011A

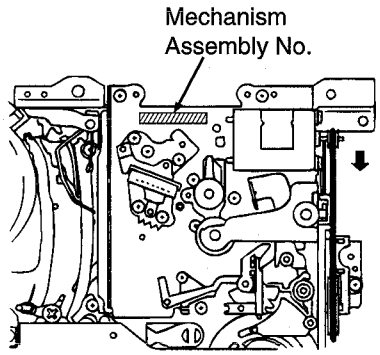


Fig 2-1

2. To check the production country code
Read the RATING LABEL on the unit to check where it was made in.
If MADE IN JAPAN or MADE IN P.R.C., the production country code is E.
If MADE IN MALAYSIA, the production country code is M.

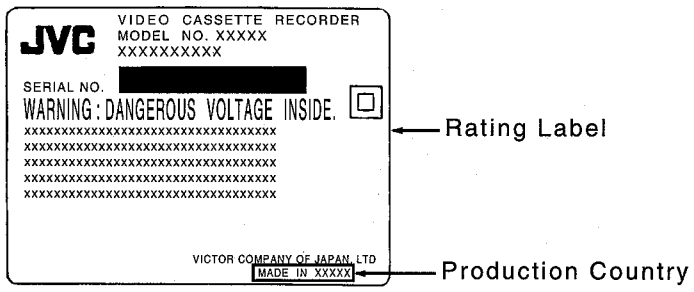
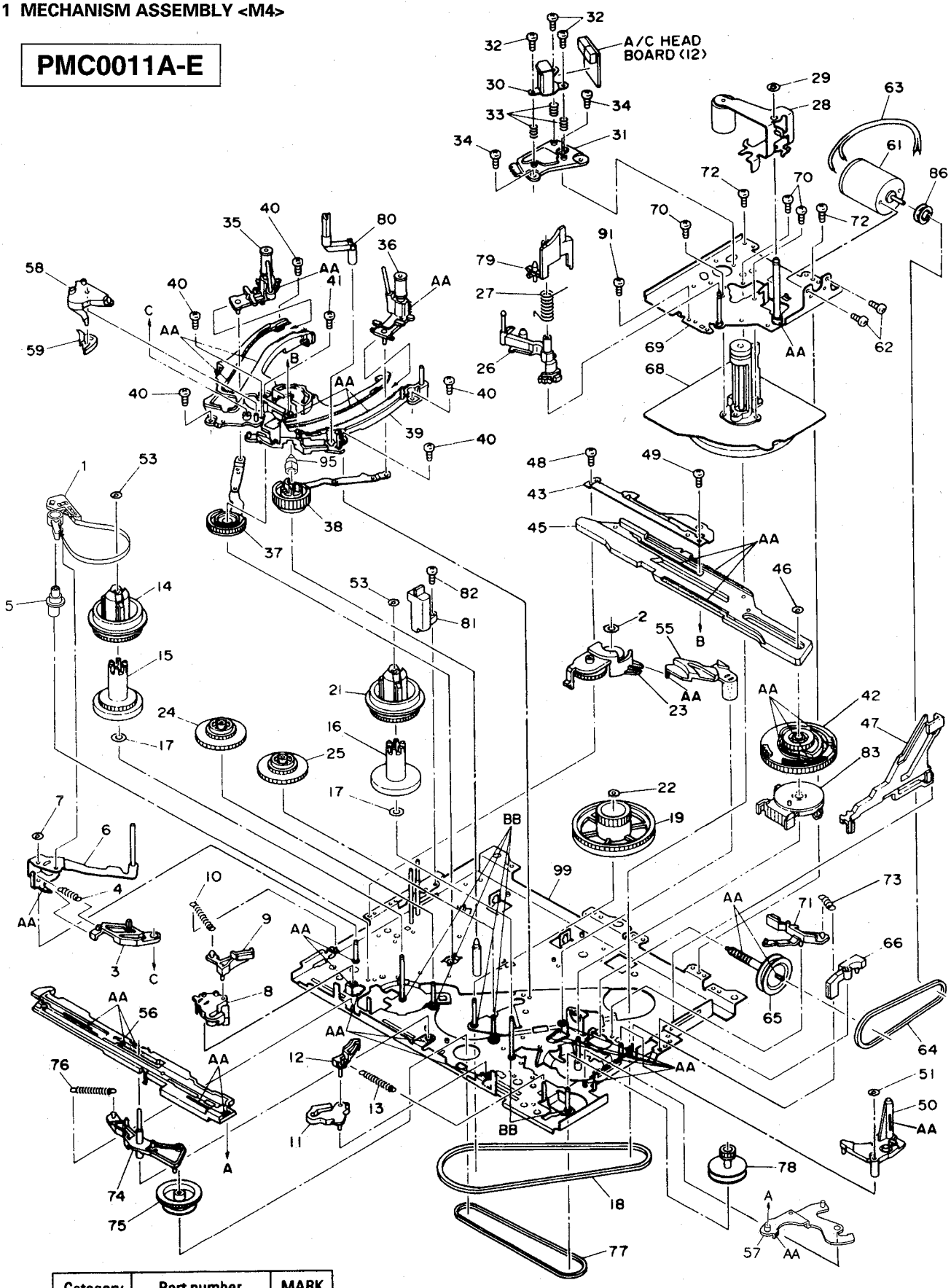


Fig.2-2

3. To check the mechanism assembly number
The mechanism assembly number can be obtained by adding the model number checked at 1, and the production country code checked at 2.
If the model number is PMC0011A and the production country mode is E, the mechanism assembly number is PMC0011A-E.
For the parts number of the parts making up PMC0011A-E, refer to the parts lists on the following pages.

2.1 MECHANISM ASSEMBLY <M4>

PMC0011A-E



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0011A-E

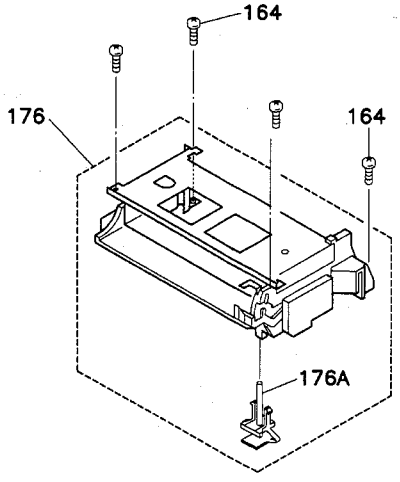
# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

	1	LP40006-001B	TENSION BAND ASSEMBLY
	2	PQM30017-34	SLIT WASHER
	3	PQ35012-1-5	TENSION ARM LEVER
	4	PQM30001-385109	TENSION SPRING
	5	LP30103-001A	ADJUST PIN
	6	PQ46303B-8	TENSION ARM ASSEMBLY
	7	PQM30017-47	SLIT WASHER
	8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
	9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
	10	PQM30001-393	TENSION SPRING
	11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
	12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
	13	PQM30001-389102	TENSION SPRING
	14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
	15	PQ35436	SLIT DISK (SUPPLY)
	16	PQ35437	SLIT DISK (TAKE UP)
	17	PQM30018-76	SPACER,X2
	18	PQM30003-38	BELT (CAPSTAN)
	19	PQ46497B-2	PULLEY
	21	PQ46562B	REEL ASSEMBLY (TAKE UP)
	22	PQM30018-69	SPACER
	23	PQ46312C-15	IDLER ARM ASSEMBLY
	24	PQ46316D	CLUTCH UNIT (SUPPLY)
	25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
	26	PQ46325D	GUIDE ARM ASSEMBLY
	27	PQ46326-2	TORSION SPRING
	28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
	29	PQM30017-24	SLIT WASHER,P LEVER
	30	PEHE0182	AUDIO CONTROL HEAD
	31	PQ35206-1-3	HEAD BASE
	32	PQ43687A	SCREW,X3
	33	PQM30002-192	COMPRESSION SPRING,X3
	34	SDSP2604Z	SCREW,X2
	35	PQ46595B-5	POLE BASE ASSEMBLY (SUPPLY)
	36	PQ46331C	POLE BASE ASSEMBLY (TAKE UP)
	37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
	38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
	39	PQ11657-1-9	GUIDE RAIL
	40	SPST2608Z	SCREW,X5
	41	SDST2612Z	SCREW
	42	LP20003-001A	CONTROL CAM
	43	PQ35138-3	CONTROL BRACKET
	45	LP10004-001B	CONTROL PLATE
	46	PQM30017-8	SLIT WASHER
	47	PQ21685-2-10	PINCH PLATE
	48	SPST2606Z	SCREW
	49	SPSF2608M	SCREW
	50	PQ46342B-10	LEVER ASSEMBLY
	51	PQM30017-8	SLIT WASHER
	53	PQM30017-47	SLIT WASHER,X2
	55	PQ35026-1-7	IDLER LEVER
	56	PQ11659-1-11	SLIDE PLATE
	57	LP40014-001A	CHANGE LEVER ASSEMBLY
	58	PQ21686-1-3	TAKE UP LEVER
	59	PQ46345-1-2	TAKE UP HEAD
⚠	61	PU60628-3-2	LOADING MOTOR
	62	SPSP3003Z	SCREW,X2
	63	PW30101-80AJ632	WIRE
	64	LP30005-002A	BELT
	65	PQ46395B	WORM GEAR ASSEMBLY
	66	PQ21699-1-2	WORM BEARING
⚠	68	PU61487-2-3	CAPSTAN MOTOR
	69	PQ46347F-16	SUB DECK ASSEMBLY
	70	SPSG2608Z	SCREW,X3
	71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
	72	SPST2606Z	SCREW,X2
	73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
	74	PQ46353A-2	CHANGE ARM ASSEMBLY
	75	PQ46354	CHANGE GEAR
	76	PQM30001-386	TENSION SPRING
	77	PQM30003-40	BELT
	78	LP40008-001A	CASSETTE GEAR
	79	PQ35030-1-5	LID GUIDE
	80	LP20032-001A	LED PRISM
	81	PEHE0237	FULL ERASE HEAD
	82	SDST2610Z	SCREW
	83	PU61432-1-1	ROTARY ENCODER
	86	PQ43546-1-2	MOTOR PULLEY
	91	SDSP2604Z	SCREW
	95	PQ46767-1-2	GUIDE CAP
	99	PQ21680M-23	MAIN DECK ASSEMBLY

AUDIO/CONTROL HEAD BOARD ASSY <12>

PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7)MAIN

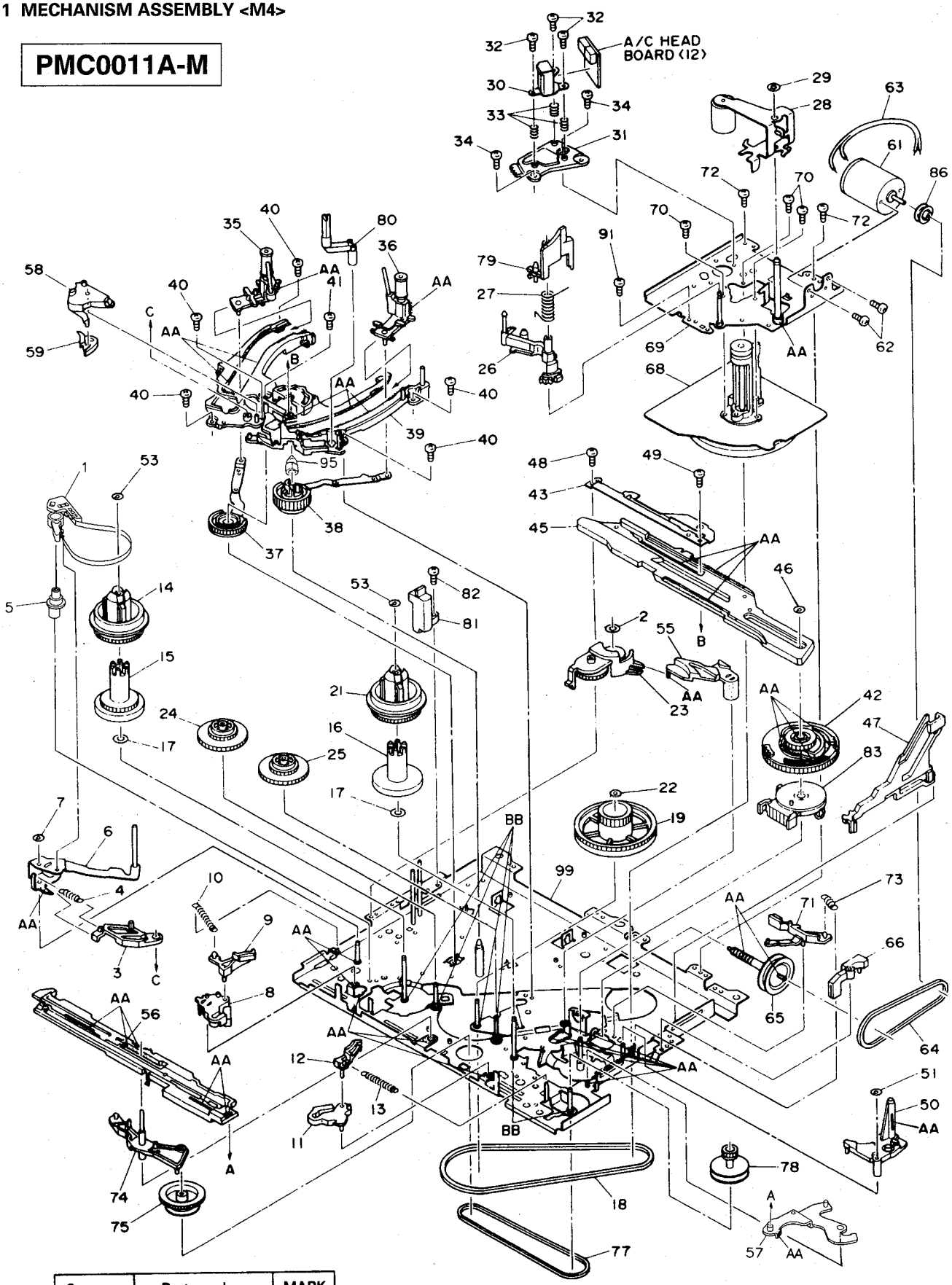


– CASSETTE HOUSING –

164	SPST2606Z	SCREW, ×2 CASSETTE HOUSING
176	PU29724E	CASSETTE HOUSING ASSY
176A	PQ46359	CASSETTE SWITCH PIN

2.1 MECHANISM ASSEMBLY <M4>

PMC0011A-M



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

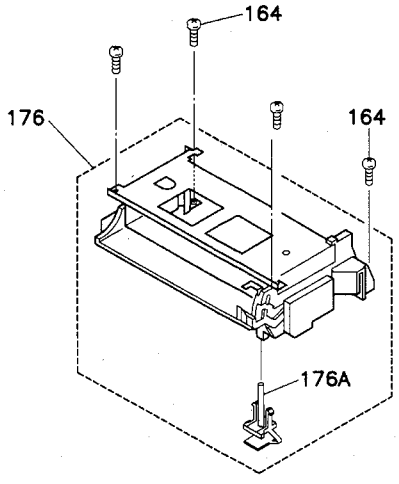
NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0011A-M

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

		1	LP40006-001B	TENSION BAND ASSEMBLY
		2	PQM30017-34	SLIT WASHER
		3	PQ35012-1-5	TENSION ARM LEVER
		4	PQM30001-385109	TENSION SPRING
		5	LP30103-001A	ADJUST PIN
		6	PQ46303A-8	TENSION ARM ASSEMBLY
		7	PQM30017-47	SLIT WASHER
		8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
		9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
		10	PQM30001-393	TENSION SPRING
		11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
		12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
		13	PQM30001-389102	TENSION SPRING
		14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
		15	PQ35436	SLIT DISK (SUPPLY)
		16	PQ35437	SLIT DISK (TAKE UP)
		17	PQM30018-79	SPACER,X2
		18	PQM30003-38	BELT (CAPSTAN)
		19	PQ46497B-2	PULLEY
		21	PQ46562B	REEL ASSEMBLY (TAKE UP)
		22	PQM30018-69	SPACER
		23	PQ46312C-15	IDLER ARM ASSEMBLY
		24	PQ46316C-6	CLUTCH UNIT (SUPPLY)
		25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
		26	PQ46325C-9	GUIDE ARM ASSEMBLY
		27	PQ46326-2	TORSION SPRING
		28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
		29	PQM30017-24	SLIT WASHER,P LEVER
		30	PEHE0182	AUDIO CONTROL HEAD
		31	PQ35206-1-3	HEAD BASE
		32	PQ43687A	SCREW,X3
		33	PQM30002-192	COMPRESSION SPRING,X3
		34	SDSP2604Z	SCREW,X2
		35	PQ46595B-5	POLE BASE ASSEMBLY (SUPPLY)
		36	PQ46331C	POLE BASE ASSEMBLY (TAKE UP)
		37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
		38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
		39	PQ11657-1-9	GUIDE RAIL
		40	SPST2608Z	SCREW,X5



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		41	SDST2612Z	SCREW
		42	LP20003-001A	CONTROL CAM
		43	PQ35138-1-2	CONTROL BRACKET
		45	LP10004-001B	CONTROL PLATE
		46	PQM30017-8	SLIT WASHER
		47	PQ21685-2-10	PINCH PLATE
		48	SPST2606Z	SCREW
		49	SPSF2608M	SCREW
		50	PQ46342D-10	LEVER ASSEMBLY
		51	PQM30017-8	SLIT WASHER
		53	PQM30017-47	SLIT WASHER,X2
		55	PQ35026-1-7	IDLER LEVER
		56	PQ11659-1-14	SLIDE PLATE
		57	LP40014-001A	CHANGE LEVER ASSEMBLY
		58	PQ21686-1-3	TAKE UP LEVER
		59	PQ46345-1-2	TAKE UP HEAD
	⚠	61	PU60628-3-2	LOADING MOTOR
		62	SPSP3003Z	SCREW,X2
		63	PW30101-80AJ632	WIRE
		64	LP30005-002A	BELT
		65	PQ46395B	WORM GEAR ASSEMBLY
		66	PQ21699-1-2	WORM BEARING
	⚠	68	PU61487-2-3	CAPSTAN MOTOR
		69	PQ46347D	SUB DECK ASSEMBLY
		70	SPSG2608Z	SCREW,X3
		71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
		72	SPST2606Z	SCREW,X2
		73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
		74	PQ46353A-2	CHANGE ARM ASSEMBLY
		75	PQ46354	CHANGE GEAR
		77	PQM30003-40	BELT
		78	LP40008-001A	CASSETTE GEAR
		79	PQ35030-1-5	LID GUIDE
		80	LP20032-001A	LED PRISM
		81	PEHE0237	FULL ERASE HEAD
		82	SDST2610Z	SCREW
		83	PU61432-1-1	ROTARY ENCODER
		86	PQ43546-1-2	MOTOR PULLEY
		91	SDSP2604Z	SCREW
		95	PQ46767-1-2	GUIDE CAP
		99	PQ21680L-23	MAIN DECK ASSEMBLY

AUDIO/CONTROL HEAD BOARD ASSY <12>

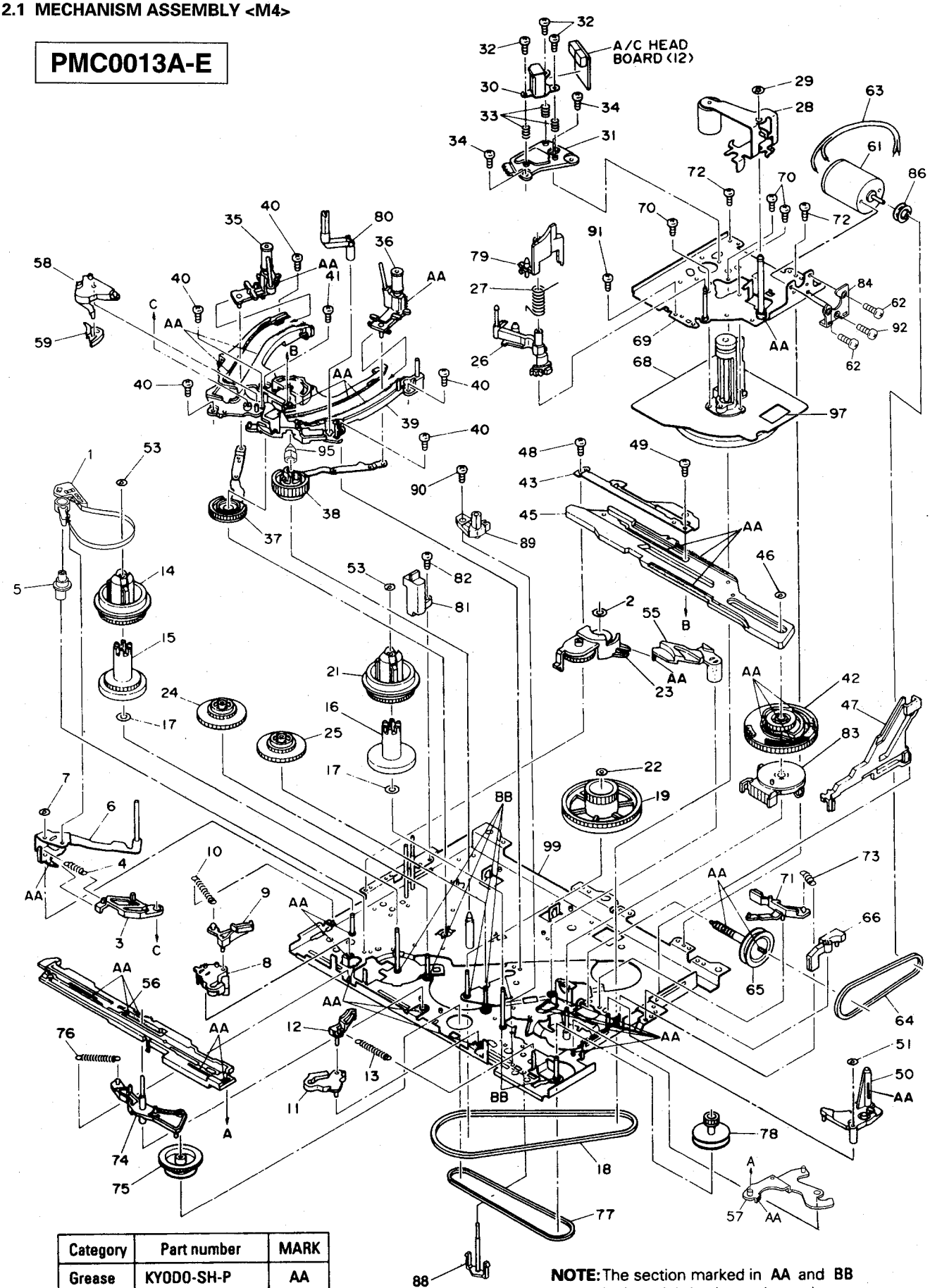
		PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
		CN1	PU60910-107	CONNECTOR,(1-7)MAIN

– CASSETTE HOUSING –

		164	SPST2606Z	SCREW, x2 CASSETTE HOUSING
		176	PU29724E	CASSETTE HOUSING ASSY
		176A	PQ46359	CASSETTE SWITCH PIN

2.1 MECHANISM ASSEMBLY <M4>

PMC0013A-E



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

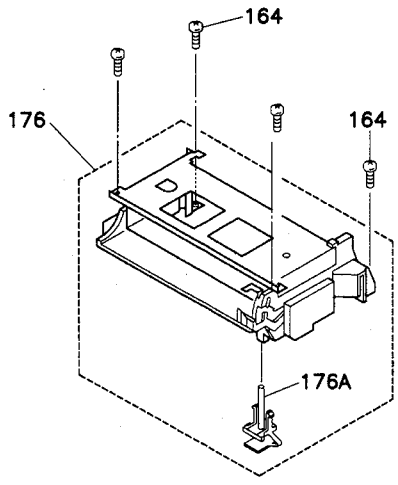
NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0013A-E

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

	1	LP40006-001B	TENSION BAND ASSEMBLY
	2	PQM30017-34	SLIT WASHER
	3	PQ35012-1-5	TENSION ARM LEVER
	4	PQM30001-385109	TENSION SPRING
	5	LP30103-001A	ADJUST PIN
	6	PQ46303B-8	TENSION ARM ASSEMBLY
	7	PQM30017-47	SLIT WASHER
	8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
	9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
	10	PQM30001-393	TENSION SPRING
	11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
	12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
	13	PQM30001-389102	TENSION SPRING
	14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
	15	PQ35436	SLIT DISK (SUPPLY)
	16	PQ35437	SLIT DISK (TAKE UP)
	17	PQM30018-76	SPACER,X2
	18	PQM30003-38	BELT (CAPSTAN)
	19	PQ46497B-2	PULLEY
	21	PQ46562B	REEL ASSEMBLY (TAKE UP)
	22	PQM30018-69	SPACER
	23	PQ46312C-15	IDLER ARM ASSEMBLY
	24	PQ46316D	CLUTCH UNIT (SUPPLY)
	25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
	26	PQ46325D	GUIDE ARM ASSEMBLY
	27	PQ46326-2	TORSION SPRING
	28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
	29	PQM30017-24	SLIT WASHER,P LEVER
	30	PEHE0182	AUDIO CONTROL HEAD
	31	PQ35206-1-3	HEAD BASE
	32	PQ43687A	SCREW,X3
	33	PQM30002-192	COMPRESSION SPRING,X3
	34	SDSP2604Z	SCREW,X2
	35	PQ46330C-10	POLE BASE ASSEMBLY (SUPPLY)
	36	PQ46331D	POLE BASE ASSEMBLY (TAKE UP)
	37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
	38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
	39	PQ11657-1-9	GUIDE RAIL
	40	SPST2608Z	SCREW,X5
	41	SDST2612Z	SCREW
	42	LP20003-001A	CONTROL CAM
	43	PQ35138-3	CONTROL BRACKET
	45	LP10004-001B	CONTROL PLATE
	46	PQM30017-8	SLIT WASHER
	47	PQ21685-2-10	PINCH PLATE
	48	SPST2606Z	SCREW
	49	SPSF2608M	SCREW
	50	PQ46342B-10	LEVER ASSEMBLY
	51	PQM30017-8	SLIT WASHER
	53	PQM30017-47	SLIT WASHER,X2
	55	PQ35026-1-7	IDLER LEVER
	56	PQ11659-1-11	SLIDE PLATE
	57	LP40014-001A	CHANGE LEVER ASSEMBLY
	58	PQ21686-1-3	TAKE UP LEVER
	59	PQ46345-1-2	TAKE UP HEAD
⚠	61	PU60628-3-2	LOADING MOTOR
	62	SPSP3005Z	SCREW,X2
	63	PW30101-80AJ632	WIRE
	64	LP30005-002A	BELT
	65	PQ46395B	WORM GEAR ASSEMBLY
	66	PQ21699-1-2	WORM BEARING
⚠	68	PU61487-2-3	CAPSTAN MOTOR
	69	PQ46347E-16	SUB DECK ASSEMBLY
	70	SPSG2608Z	SCREW,X3
	71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
	72	SPST2606Z	SCREW,X2
	73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
	74	PQ46353A-2	CHANGE ARM ASSEMBLY
	75	PQ46354	CHANGE GEAR
	76	PQM30001-386	TENSION SPRING
	77	PQM30003-40	BELT
	78	LP40008-001A	CASSETTE GEAR
	79	PQ35030-1-5	LID GUIDE
	80	LP20032-001A	LED PRISM
	81	PEHE0237	FULL ERASE HEAD
	82	SDST2610Z	SCREW
	83	PU61432-1-1	ROTARY ENCODER
	84	PQ46568-1-2	MOTOR GUIDE
	86	PQ43546-1-2	MOTOR PULLEY
	88	PQ46473-1-1	S-SW PIN
	89	PQ46474-1-2	S-SW HOLDER
	90	SPST2606Z	SCREW
	91	SDSP2604Z	SCREW
	92	SDSP2604Z	SCREW
	95	PQ46767-1-2	GUIDE CAP
	97	LP30002-013A	SPACER
	99	PQ21680P-23	MAIN DECK ASSEMBLY



AUDIO/CONTROL HEAD BOARD ASSY <12>

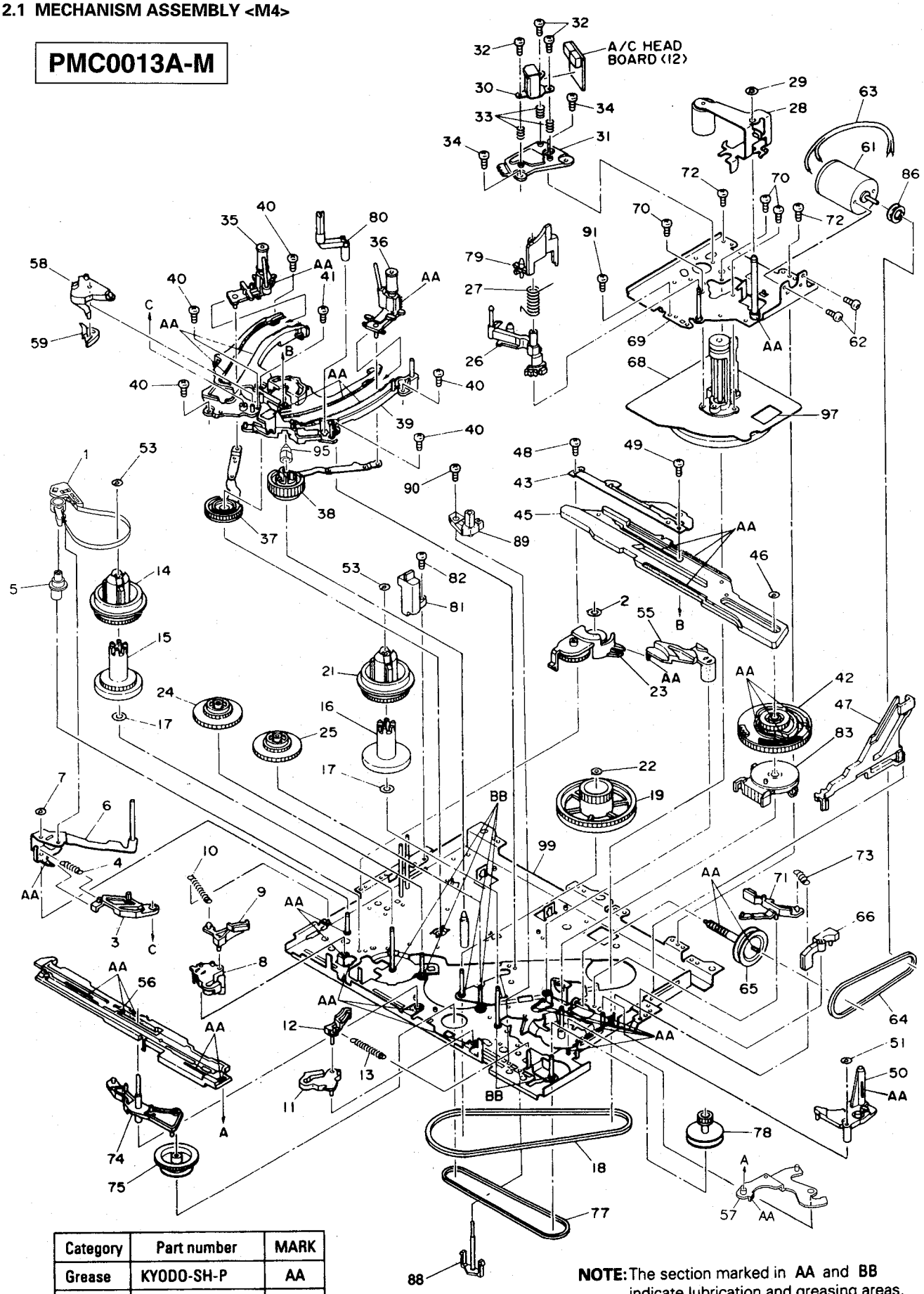
PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7)MAIN

– CASSETTE HOUSING –

164	SPST2606Z	SCREW, x2 CASSETTE HOUSING
176	PU29724F	CASSETTE HOUSING ASSY
176A	PQ46359	CASSETTE SWITCH PIN

2.1 MECHANISM ASSEMBLY <M4>

PMC0013A-M



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

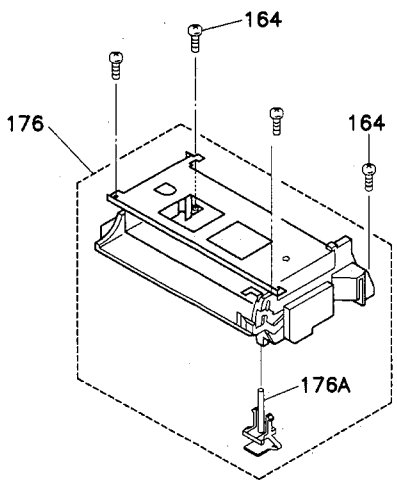
NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0013A-M

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

	1	LP40006-001B	TENSION BAND ASSEMBLY
	2	PQM30017-34	SLIT WASHER
	3	PQ35012-1-5	TENSION ARM LEVER
	4	PQM30001-385109	TENSION SPRING
	5	LP30103-001A	ADJUST PIN
	6	PQ46303A-8	TENSION ARM ASSEMBLY
	7	PQM30017-47	SLIT WASHER
	8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
	9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
	10	PQM30001-393	TENSION SPRING
	11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
	12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
	13	PQM30001-389102	TENSION SPRING
	14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
	15	PQ35436	SLIT DISK (SUPPLY)
	16	PQ35437	SLIT DISK (TAKE UP)
	17	PQM30018-79	SPACER,X2
	18	PQM30003-38	BELT (CAPSTAN)
	19	PQ46497B-2	PULLEY
	21	PQ46562B	REEL ASSEMBLY (TAKE UP)
	22	PQM30018-69	SPACER
	23	PQ46312C-15	IDLER ARM ASSEMBLY
	24	PQ46316C-6	CLUTCH UNIT (SUPPLY)
	25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
	26	PQ46325C-9	GUIDE ARM ASSEMBLY
	27	PQ46326-2	TORSION SPRING
	28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
	29	PQM30017-24	SLIT WASHER,P LEVER
	30	PEHE0182	AUDIO CONTROL HEAD
	31	PQ35206-1-3	HEAD BASE
	32	PQ43687A	SCREW,X3
	33	PQM30002-192	COMPRESSION SPRING,X3
	34	SDSP2604Z	SCREW,X2
	35	PQ46330C-10	POLE BASE ASSEMBLY (SUPPLY)
	36	PQ46331D	POLE BASE ASSEMBLY (TAKE UP)
	37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
	38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
	39	PQ11657-1-9	GUIDE RAIL
	40	SPST2608Z	SCREW,X5
	41	SDST2612Z	SCREW
	42	LP20003-001A	CONTROL CAM
	43	PQ35138-1-2	CONTROL BRACKET
	45	LP10004-001B	CONTROL PLATE
	46	PQM30017-8	SLIT WASHER
	47	PQ21685-2-10	PINCH PLATE
	48	SPST2606Z	SCREW
	49	SPSF2608M	SCREW
	50	PQ46342D-10	LEVER ASSEMBLY
	51	PQM30017-8	SLIT WASHER
	53	PQM30017-47	SLIT WASHER,X2
	55	PQ35026-1-7	IDLER LEVER
	56	PQ11659-1-14	SLIDE PLATE
	57	LP40014-001A	CHANGE LEVER ASSEMBLY
	58	PQ21686-1-3	TAKE UP LEVER
	59	PQ46345-1-2	TAKE UP HEAD
⚠	61	PU60628-3-2	LOADING MOTOR
	62	SPSP3003Z	SCREW,X2
	63	PW30101-80AJ632	WIRE
	64	LP30005-002A	BELT
	65	PQ46395B	WORM GEAR ASSEMBLY
	66	PQ21699-1-2	WORM BEARING
⚠	68	PU61487-2-3	CAPSTAN MOTOR
	69	PQ46347D	SUB DECK ASSEMBLY
	70	SPSG2608Z	SCREW,X3
	71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
	72	SPST2606Z	SCREW,X2
	73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
	74	PQ46353A-2	CHANGE ARM ASSEMBLY
	75	PQ46354	CHANGE GEAR
	77	PQM30003-40	BELT
	78	LP40008-001A	CASSETTE GEAR
	79	PQ35030-1-5	LID GUIDE
	80	LP20032-001A	LED PRISM
	81	PEHE0237	FULL ERASE HEAD
	82	SDST2610Z	SCREW
	83	PU61432-1-1	ROTARY ENCODER
	86	PQ43546-1-2	MOTOR PULLEY
	88	PQ46473-1-1	S-SW PIN
	89	PQ46474-1-2	S-SW HOLDER
	90	SPST2606Z	SCREW
	91	SDSP2604Z	SCREW
	95	PQ46767-1-2	GUIDE CAP
	97	LP30002-13A	SPACER
	99	PQ21680N-23	MAIN DECK ASSEMBLY



AUDIO/CONTROL HEAD BOARD ASSY <12>

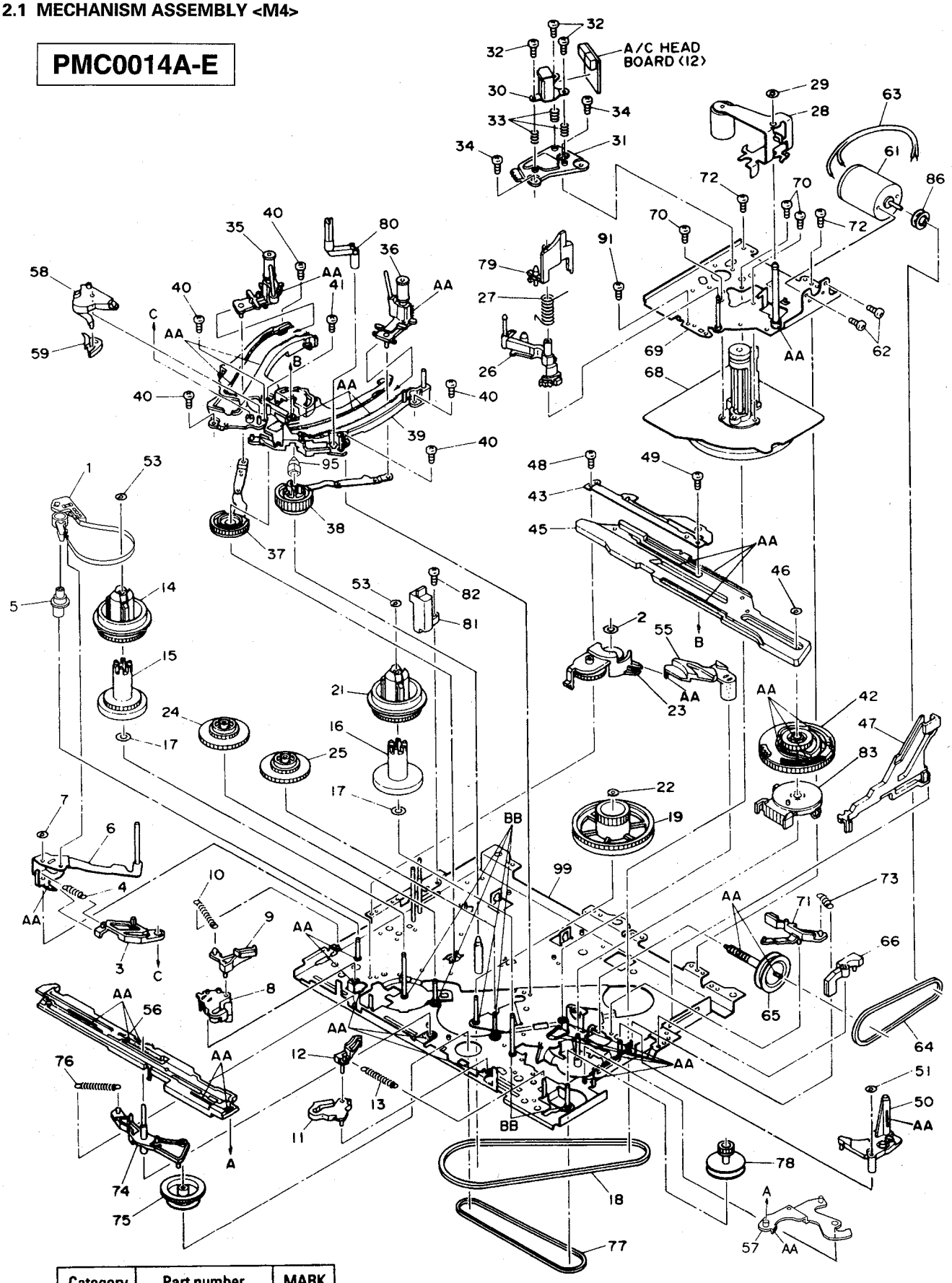
PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7)MAIN

– CASSETTE HOUSING –

164	SPST2606Z	SCREW, x2 CASSETTE HOUSING
176	PU29724F	CASSETTE HOUSING ASSY
176A	PQ46359	CASSETTE SWITCH PIN

2.1 MECHANISM ASSEMBLY <M4>

PMC0014A-E



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

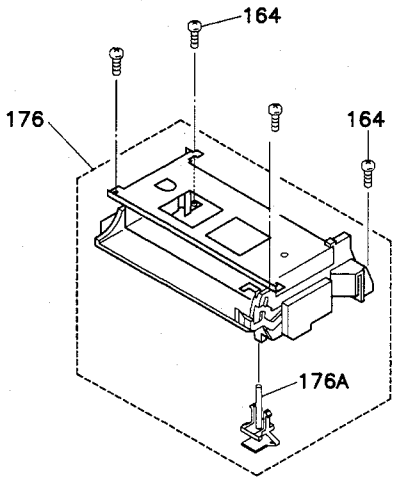
NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0014A-E

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

		1	LP40006-001B	TENSION BAND ASSEMBLY
		2	PQM30017-34	SLIT WASHER
		3	PQ35012-1-5	TENSION ARM LEVER
		4	PQM30001-385109	TENSION SPRING
		5	LP30103-001A	ADJUST PIN
		6	PQ46303B-8	TENSION ARM ASSEMBLY
		7	PQM30017-47	SLIT WASHER
		8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
		9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
		10	PQM30001-393	TENSION SPRING
		11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
		12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
		13	PQM30001-389102	TENSION SPRING
		14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
		15	PQ35436	SLIT DISK (SUPPLY)
		16	PQ35437	SLIT DISK (TAKE UP)
		17	PQM30018-76	SPACER,X2
		18	PQM30003-38	BELT (CAPSTAN)
		19	PQ46497B-2	PULLEY
		21	PQ46562B	REEL ASSEMBLY (TAKE UP)
		22	PQM30018-69	SPACER
		23	PQ46312C-15	IDLER ARM ASSEMBLY
		24	PQ46316D	CLUTCH UNIT (SUPPLY)
		25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
		26	PQ46325D	GUIDE ARM ASSEMBLY
		27	PQ46326-2	TORSION SPRING
		28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
		29	PQM30017-24	SLIT WASHER,P LEVER
		30	PEHE0182	AUDIO CONTROL HEAD
		31	PQ35206-1-3	HEAD BASE
		32	PQ43687A	SCREW,X3
		33	PQM30002-192	COMPRESSION SPRING,X3
		34	SDSP2604Z	SCREW,X2
		35	PQ46595B-5	POLE BASE ASSEMBLY (SUPPLY)
		36	PQ46331C	POLE BASE ASSEMBLY (TAKE UP)
		37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
		38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
		39	PQ11657-1-9	GUIDE RAIL
		40	SPST2608Z	SCREW,X5
		41	SDST2612Z	SCREW
		42	LP20003-001A	CONTROL CAM
		43	PQ35138-3	CONTROL BRACKET
		45	LP10004-001B	CONTROL PLATE
		46	PQM30017-8	SLIT WASHER
		47	PQ21685-2-10	PINCH PLATE
		48	SPST2606Z	SCREW
		49	SPSF2608M	SCREW
		50	PQ46342B-10	LEVER ASSEMBLY
		51	PQM30017-8	SLIT WASHER
		53	PQM30017-47	SLIT WASHER,X2
		55	PQ35026-1-7	IDLER LEVER
		56	PQ11659-1-11	SLIDE PLATE
		57	LP40014-001A	CHANGE LEVER ASSEMBLY
		58	PQ21686-1-3	TAKE UP LEVER
		59	PQ46345-1-2	TAKE UP HEAD
	⚠	61	PU60628-3-2	LOADING MOTOR
		62	SPSP3003Z	SCREW,X2
		63	PW30101-80AJ632	WIRE
		64	LP30005-002A	BELT
		65	PQ46395B	WORM GEAR ASSEMBLY
		66	PQ21699-1-2	WORM BEARING
	⚠	68	PU61487-2-3	CAPSTAN MOTOR
		69	PQ46347F-16	SUB DECK ASSEMBLY
		70	SPSG2608Z	SCREW,X3
		71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
		72	SPST2606Z	SCREW,X2
		73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
		74	PQ46353A-2	CHANGE ARM ASSEMBLY
		75	PQ46354	CHANGE GEAR
		76	PQM30001-386	TENSION SPRING
		77	PQM30003-40	BELT
		78	LP40008-001A	CASSETTE GEAR
		79	PQ35030-1-5	LID GUIDE
		80	LP20032-001A	LED PRISM
		81	PEHE0237	FULL ERASE HEAD
		82	SDST2610Z	SCREW
		83	PU61432-1-1	ROTARY ENCODER
		86	PQ43546-1-2	MOTOR PULLEY
		91	SDSP2604Z	SCREW
		95	PQ46767-1-2	GUIDE CAP
		99	PQ21680M-23	MAIN DECK ASSEMBLY



AUDIO/CONTROL HEAD BOARD ASSY <12>

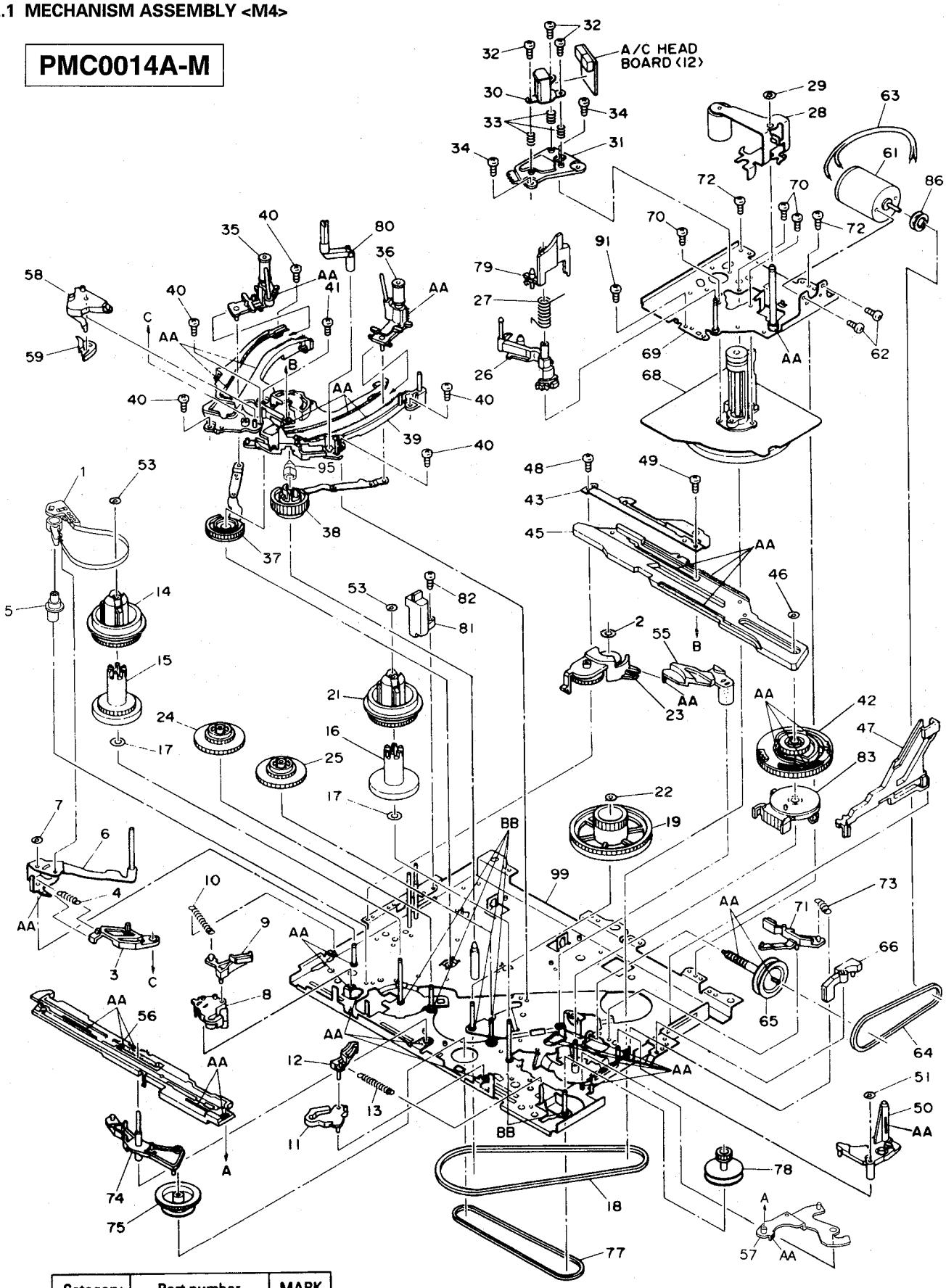
PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7)MAIN

– CASSETTE HOUSING –

164	SPST2606Z	SCREW, ×2 CASSETTE HOUSING
176	PU29724F	CASSETTE HOUSING ASSY
176A	PQ46359	CASSETTE SWITCH PIN

2.1 MECHANISM ASSEMBLY <M4>

PMC0014A-M



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

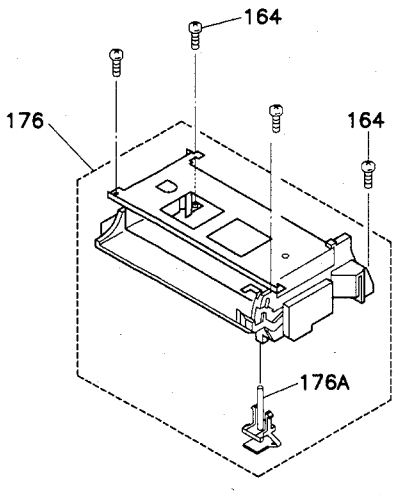
NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0014A-M

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

		1	LP40006-001B	TENSION BAND ASSEMBLY
		2	PQM30017-34	SLIT WASHER
		3	PQ35012-1-5	TENSION ARM LEVER
		4	PQM30001-385109	TENSION SPRING
		5	LP30103-001A	ADJUST PIN
		6	PQ46303A-8	TENSION ARM ASSEMBLY
		7	PQM30017-47	SLIT WASHER
		8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
		9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
		10	PQM30001-393	TENSION SPRING
		11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
		12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
		13	PQM30001-389102	TENSION SPRING
		14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
		15	PQ35436	SLIT DISK (SUPPLY)
		16	PQ35437	SLIT DISK (TAKE UP)
		17	PQM30018-79	SPACER,X2
		18	PQM30003-38	BELT (CAPSTAN)
		19	PQ46497B-2	PULLEY
		21	PQ46562B	REEL ASSEMBLY (TAKE UP)
		22	PQM30018-69	SPACER
		23	PQ46312C-15	IDLER ARM ASSEMBLY
		24	PQ46316C-6	CLUTCH UNIT (SUPPLY)
		25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
		26	PQ46325C-9	GUIDE ARM ASSEMBLY
		27	PQ46326-2	TORSION SPRING
		28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
		29	PQM30017-24	SLIT WASHER,P LEVER
		30	PEHE0182	AUDIO CONTROL HEAD
		31	PQ35206-1-3	HEAD BASE
		32	PQ43687A	SCREW,X3
		33	PQM30002-192	COMPRESSION SPRING,X3
		34	SDSP2604Z	SCREW,X2
		35	PQ46595B-5	POLE BASE ASSEMBLY (SUPPLY)
		36	PQ46331C	POLE BASE ASSEMBLY (TAKE UP)
		37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
		38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
		39	PQ11657-1-9	GUIDE RAIL
		40	SPST2608Z	SCREW,X5
		41	SDST2612Z	SCREW
		42	LP20003-001A	CONTROL CAM
		43	PQ35138-1-2	CONTROL BRACKET
		45	LP10004-001B	CONTROL PLATE
		46	PQM30017-8	SLIT WASHER
		47	PQ21685-2-10	PINCH PLATE
		48	SPST2606Z	SCREW
		49	SPSF2608M	SCREW
		50	PQ46342D-10	LEVER ASSEMBLY
		51	PQM30017-8	SLIT WASHER
		53	PQM30017-47	SLIT WASHER,X2
		55	PQ35026-1-7	IDLER LEVER
		56	PQ11659-1-14	SLIDE PLATE
		57	LP40014-001A	CHANGE LEVER ASSEMBLY
		58	PQ21686-1-3	TAKE UP LEVER
		59	PQ46345-1-2	TAKE UP HEAD
	⚠	61	PU60628-3-2	LOADING MOTOR
		62	SPSP3003Z	SCREW,X2
		63	PW30101-80AJ632	WIRE
		64	LP30005-002A	BELT
		65	PQ46395B	WORM GEAR ASSEMBLY
		66	PQ21699-1-2	WORM BEARING
	⚠	68	PU61487-2-3	CAPSTAN MOTOR
		69	PQ46347D	SUB DECK ASSEMBLY
		70	SPSG2608Z	SCREW,X3
		71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
		72	SPST2606Z	SCREW,X2
		73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
		74	PQ46353A-2	CHANGE ARM ASSEMBLY
		75	PQ46354	CHANGE GEAR
		77	PQM30003-40	BELT
		78	LP40008-001A	CASSETTE GEAR
		79	PQ35030-1-5	LID GUIDE
		80	LP20032-001A	LED PRISM
		81	PEHE0237	FULL ERASE HEAD
		82	SDST2610Z	SCREW
		83	PU61432-1-1	ROTARY ENCODER
		86	PQ43546-1-2	MOTOR PULLEY
		91	SDSP2604Z	SCREW
		95	PQ46767-1-2	GUIDE CAP
		99	PQ21680L-23	MAIN DECK ASSEMBLY



AUDIO/CONTROL HEAD BOARD ASSY <12>

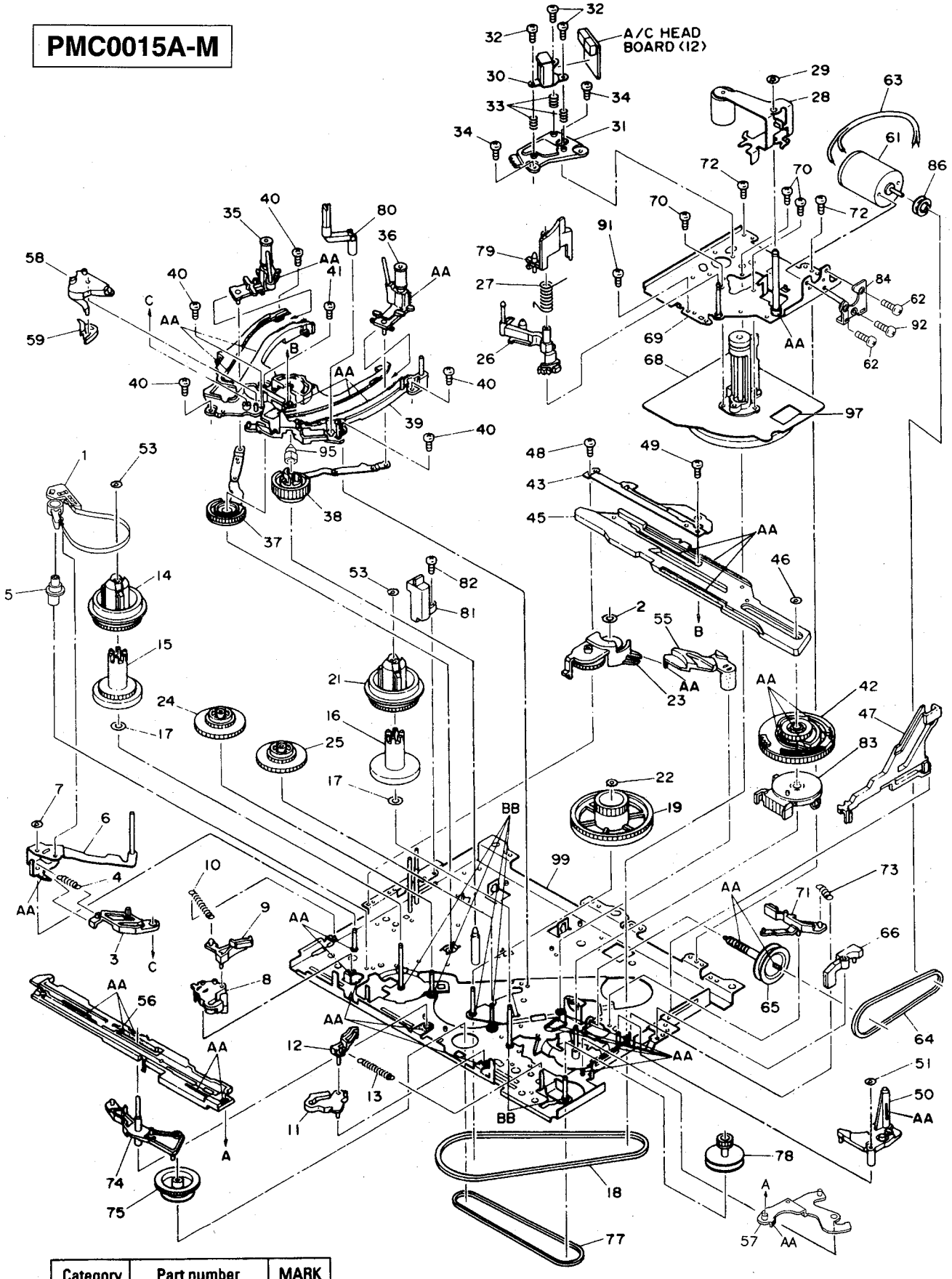
PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7)MAIN

– CASSETTE HOUSING –

164	SPST2606Z	SCREW, x2 CASSETTE HOUSING
176	PU29724F	CASSETTE HOUSING ASSY
176A	PQ46359	CASSETTE SWITCH PIN

2.1 MECHANISM ASSEMBLY <M4>

PMC0015A-M



Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

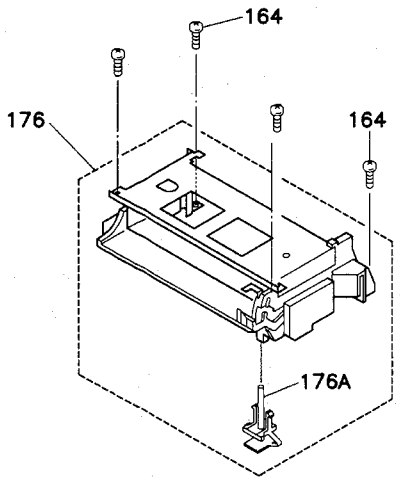
NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

PMC0015A-M

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

		1	LP40006-001B	TENSION BAND ASSEMBLY
		2	PQM30017-34	SLIT WASHER
		3	PQ35012-1-5	TENSION ARM LEVER
		4	PQM30001-385109	TENSION SPRING
		5	LP30103-001A	ADJUST PIN
		6	PQ46303A-8	TENSION ARM ASSEMBLY
		7	PQM30017-47	SLIT WASHER
		8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
		9	PQ46306A-6	SUB BRAKE ASSEMBLY (SUPPLY)
		10	PQM30001-393	TENSION SPRING
		11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
		12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
		13	PQM30001-389102	TENSION SPRING
		14	PQ46561B	REEL DISK ASSEMBLY (SUPPLY)
		15	PQ35436	SLIT DISK (SUPPLY)
		16	PQ35437	SLIT DISK (TAKE UP)
		17	PQM30018-79	SPACER,X2
		18	PQM30003-38	BELT (CAPSTAN)
		19	PQ46497B-2	PULLEY
		21	PQ46562B	REEL ASSEMBLY (TAKE UP)
		22	PQM30018-69	SPACER
		23	PQ46312C-15	IDLER ARM ASSEMBLY
		24	PQ46316C-6	CLUTCH UNIT (SUPPLY)
		25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
		26	PQ46325C-9	GUIDE ARM ASSEMBLY
		27	PQ46326-2	TORSION SPRING
		28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
		29	PQM30017-24	SLIT WASHER,P LEVER
		30	PEHE0182	AUDIO CONTROL HEAD
		31	PQ35206-1-3	HEAD BASE
		32	PQ43687A	SCREW,X3
		33	PQM30002-192	COMPRESSION SPRING,X3
		34	SDSP2604Z	SCREW,X2
		35	PQ46330C-10	POLE BASE ASSEMBLY (SUPPLY)
		36	PQ46331D	POLE BASE ASSEMBLY (TAKE UP)
		37	PQ46332B-3	LOADING ARM ASSEMBLY (SUPPLY)
		38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
		39	PQ11657-1-9	GUIDE RAIL
		40	SPST2608Z	SCREW,X5
		41	SDST2612Z	SCREW
		42	LP20003-001A	CONTROL CAM
		43	PQ35138-1-2	CONTROL BRACKET
		45	LP10004-001B	CONTROL PLATE
		46	PQM30017-8	SLIT WASHER
		47	PQ21685-2-10	PINCH PLATE
		48	SPST2606Z	SCREW
		49	SPSF2608M	SCREW
		50	PQ46342D-10	LEVER ASSEMBLY
		51	PQM30017-8	SLIT WASHER
		53	PQM30017-47	SLIT WASHER,X2
		55	PQ35026-1-7	IDLER LEVER
		56	PQ11659-1-14	SLIDE PLATE
		57	LP40014-001A	CHANGE LEVER ASSEMBLY
		58	PQ21686-1-3	TAKE UP LEVER
		59	PQ46345-1-2	TAKE UP HEAD
	⚠	61	PU60628-3-2	LOADING MOTOR
		62	SPSP3005Z	SCREW,X2
		63	PW30101-80AJ632	WIRE
		64	LP30005-002A	BELT
		65	PQ46395B	WORM GEAR ASSEMBLY
		66	PQ21699-1-2	WORM BEARING
	⚠	68	PU61487-2-3	CAPSTAN MOTOR
		69	PQ46347G	SUB DECK ASSEMBLY
		70	SPSG2608Z	SCREW,X3
		71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
		72	SPST2606Z	SCREW,X2
		73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
		74	PQ46353A-2	CHANGE ARM ASSEMBLY
		75	PQ46354	CHANGE GEAR
		77	PQM30003-40	BELT
		78	LP40008-001A	CASSETTE GEAR
		79	PQ35030-1-5	LID GUIDE
		80	LP20032-001A	LED PRISM
		81	PEHE0237	FULL ERASE HEAD
		82	SDST2610Z	SCREW
		83	PU61432-1-1	ROTARY ENCODER
		84	PQ46568-1-2	MOTOR GUIDE
		86	PQ43546-1-2	MOTOR PULLEY
		91	SDSP2604Z	SCREW
		92	SDSP2604Z	SCREW
		95	PQ46767-1-2	GUIDE CAP
		97	LP30002-013A	SPACER
		99	PQ21680N-23	MAIN DECK ASSEMBLY



AUDIO/CONTROL HEAD BOARD ASSY <12>

PW1	PB10916A-04	A/CTL HEAD BOARD ASSEMBLY
CN1	PU60910-107	CONNECTOR,(1-7)MAIN

– CASSETTE HOUSING –

164	SPST2606Z	SCREW, ×2 CASSETTE HOUSING
176	PU29724F	CASSETTE HOUSING ASSY
176A	PQ46359	CASSETTE SWITCH PIN

E. & O.E. No.82595

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